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Scoliosis

Orthopedic Classification and Therapeutic Approach

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The scoliotic deformities are among the oldest known. Mention is made of them in the earliest of medical writings. There have been many discussions of the subject which have added very little to the sum of our knowledge of the etiology or of the treatment of this very crippling and deforming disease.

Some definite progress in the management of scoliosis was made with the introduction of the Sayre plaster jacket in 1877.[1] This was a milestone in the therapeutic advances in this disease.

Many gadgets and corrective devices have been designed, some of which were very clever, but none have been able to approach the ideal in the full correction of the deformity. Some of these devices which have been very successful in correcting the deformity to a marked degree, have failed in their ultimate goal in the management of the disease because of the impossibility of maintaining the correction after it was obtained. With the advent of spinal fusion operations as devised by Hibbs[2] and Albee,[3] this form of internal splinting was found to be the most effective procedure for controlling the deformity and maintaining the correction.

We are specifically concerned here with a discussion of the orthopedic classification and therapeutic approach to this problem which has been an enigma to the healing arts professions.

CLASSIFICATION

For practical purposes scolioses may be classified under two main types: (1) functional scoliosis and (2) structural scoliosis.

Functional scolioses are usually described as the types of lateral curvature of the spine in which the structural changes are incipient and which exhibit little or no pathologic change in the vertebral column. The deformity is remediable to a large extent and is caused principally by generalized weakening of the musculature and faulty posture. Functional scoliosis occurs principally in children and for the most part can be voluntarily corrected. However, if the deformity persists for a sufficient period during the plastic stage of vertebral development, structural changes will take place in the spinal column and the functional scoliosis may progress to a structural type.

Structural scolioses are those in which the organic changes of the skeleton are well established in the vertebrae, disks, ribs, shoulder girdle, and pelvis. It is with this particular type of scoliosis that the greatest therapeutic problems are encountered. It has been estimated that approximately 80 per cent of cases present no known etiological factor.

Sometimes scoliosis is further classified into congenital and acquired types. The congenital types are those in which primary developmental malformation of the skeletal structures comprises the deformity. Intrauterine malpositions may play a part in the development, but it is extremely difficult to prove such a contention. That there exist many peculiarities in skeletal development is only too well demonstrated on x-ray examination. Congenital skeletal anomalies include hemivertebra, incomplete segmentation of the vertebral bodies and ribs, torticollis, and Sprengel's deformity, either associated with or as a part of the primary curve of the deformity.

The acquired types of scoliosis are perhaps a little better understood than other types because of a better understanding of the etiological factors. Constitutional factors, which include general debility, rachitis, and the scolioses from osteomalacia, neoplasm, tuberculosis, arthritis, and injury, are not uncommon. Scoliosis may also be secondary to diseases outside of the spinal column among which are afflictions of the nervous system, such as Friedreich's ataxia, muscular dystrophy, spastic paraplegias, and hysteria. Scoliosis in this same general category may be secondary to afflictions of the internal organs, particularly respiratory and cardiac lesions.

However, these latter factors in congenital and acquired forms of scoliosis account for not more than 20 per cent of the total number of the deformities that exist. It is possible that some inherent muscular weakness or skeletal or central nervous system deficiency may be the primary factor in the inability of the spine to withstand the normal strain required of it, but it is extremely difficult to demonstrate this factor in any given case. The thought has occurred to me many times that perhaps we are dealing here with a hitherto undiscovered clinical entity, possibly a myelopathy or an undiscovered virus or rickettsial infection, which does not produce marked symptoms but which does produce scattered muscular weaknesses which allow unequal muscle tension on the flexible spinal structures and allow postural and gravitational stresses which cause lateral curvatures.

Scoliosis, again, may be classified according to its location and distribution. Probably the greatest number of curves occur in the lumbothoracic region and produce a convexity to the left side. Deformities in the midthoracic area more commonly produce a convexity to the right side. The curves that are confined to the thoracic region are probably second in frequency. The left total deformities are by far the most common encountered. The cervicothoracic curvatures, with the apex principally at the third and fourth thoracic vertebrae, most commonly project to the left side, while curvatures in the lumbar region most commonly project to the same side, their apex being at the level of the first and second lumbar vertebrae. Combined thoracic curves are not uncommon and constitute a most difficult problem.

Curvatures are usually divided into C-shaped and S-shaped curves. There may be three or more curves in the entire spine, and they frequently are associated with kyphosis which may either be angular or rounded. The term "kyphoscoliosis" has been frequently applied to this type of the deformity.

Whether the scoliosis is a functional or a structural type, all changes in the function of bones are attended by definite alterations in their internal structure (Wolff's law.) However, the deformity of scoliosis has even more far-reaching effects; there are changes not only in the bony architecture of the spine,

but also in the ligamentous and muscular structures which make up the trunk. These changes are progressive and in a great majority of cases present a problem that is almost insurmountable.

THERAPEUTIC PROGNOSIS

There is no one form of treatment, no fixed outline of treatment, and no progression of treatment that can be advocated to apply to every case. Each patient must be studied as a distinct clinical entity, and individualized treatment must be followed. One must study not only the deformity but also the individual, to decide what is best suited for his particular needs.

These patients approach the physician principally because of two factors: first, the appearance of the deformity and its cosmetic effect and, second, the occurrence of pain. Practically all the therapeutic approaches to scoliosis are directed towards correction of the deformity, maintenance of correction, and relief of pain. Pain occurs infrequently in children; it is a late symptom and frequently is ascribed to the degenerative changes of bone which occur with advancing age.

Probably the best time to institute treatment of scoliosis would be in anticipation of its occurrence or its appearance. In other words, preventive therapy should be instituted. Those deformities are far easier to prevent than they are to correct once they have occurred.

In many States compulsory school examinations are carried out on the growing child, but this practice is not carried out frequently enough or consistently enough. A program of routine examination every 6 months of all growing children in every walk of life would do much toward discovering scoliosis before much deformity had developed and would open the way for early treatment and prevention of progression of the deformity. There does not appear to be any way for a program of prevention to be carried out except to attack the disease at its lowest levels in the early school and preschool years.

A great majority of patients who seek the help of physicians in private practice come only when the disease is full-blown with the deformity well established and having progressed into the structural type. Coupled with the fact that these cases are discovered only after the deformity has manifested itself clinically, is the hesitation of both the patient and his family, over submitting to the corrective and therapeutic measures which are necessary to control the deformity once it has occurred. As a rule much valuable time is lost because the patient was brought to the physician too late and therapeutic advice was not followed. There is a saying to the effect that "the child will outgrow his deformity." This opinion has probably done more harm for scoliotic patients than any other philosophy that has so far been advanced. It is extremely improbable that one can truthfully say at any age that the deforming process has become stationary and that the danger of reactivation is abolished.

The therapeutic prognosis depends upon the age of the patient and the degree of deformity. Vertebral growth in the average female ceases between the ages of 13 and 16 years, while in the average male it ceases between the ages of 14 and 17 years. If a deformity is discovered and treatment is attempted after these ages, there is little or no hope for complete correction. During the early plastic years of vertebral growth there is hope for some improvement in structural development, but during the final period of vertebral ossification too much cannot be expected from any type of remedial therapy.

METHODS OF THERAPY

Treatment may either be conservative or radical or a combination of both. Conservative treatment is sometimes described as postural treatment and is best applied in those patients who have a minimal deformity, with good compensation, slight asymmetry, and a good degree of flexibility. Postural treatment tends to improve the appearance of the patient by balancing or compensating the upper and lower curves and by lessening the lumbar and cervical lordosis, thus causing the thoracic deformity to appear smaller. The general health of the patient will certainly be improved by improvement in posture, but for the most part the curvature itself cannot be decreased by postural means. Symmetrical postural exercises must be given under close observation, because it is only by the constant attention of the physician that the progress of the deformity can be studied.

Certain postural deformities will be improved with exercise, but it is extremely doubtful that actual correction of a structural spinal curvature can be obtained by exercises either of a symmetrical or asymmetrical type. Probably exercises have their greatest applicability in producing mobility in the segments of the spine in anticipation of or during the course of corrective procedures. However, exercises should be prescribed cautiously since they may tend to mobilize a hitherto static curvature and allow further collapse of the segments.

It has been my routine in the observation and control of these patients to insist upon serial x-ray examination in the erect position, including thoracic as well as lumbar spine studies. Such studies are made at from 3- to 6-month intervals, depending upon the individual case and its progressive activities. Frequently the progressive activity of a curve can be determined only by such x-ray examination, as postural exercises and other treatment of this type may produce development of the overlying muscles which clouds the clinical manifestations. Often a patient who appears to be improved clinically, is getting progressively worse radiographically.

During the course of what might be called mobilization and postural treatment, some form of support is necessary for the curvature and to curb its progressive tendencies. This support may be in the form of a light crutch-type scoliosis brace which incorporates a lateral corrective force by means of a turnbuckle or corset, a light plaster corrective jacket, or a celluloid jacket. The support should be worn at all times when the patient is ambulatory, but should be removed during the periods of exercise and rest.

Such active supportive measures as described above should be employed in the average case until vertebral ossification is complete. It has been my experience that this is the most difficult recommendation for the patient or his family to follow, because most cases occur in young girls and there is a feeling that wearing a support will interfere with their social activities to an extent that might be detrimental psychologically. No doubt some of this is true, but as far as the deformity of scoliosis is concerned, it must be supported and protected against its own progression.

For information concerning the exercises which are advocated in the mobilization and correction of

scoliotic deformities, I would recommend to the student some of the numerous texts on the subject which are available today.[4,5,6,7,8]

No discussion of the postural treatment of this deformity would be complete without mention and comment on the effect of unleveling of the sacral base plane, inequality in leg length, and deformities of the lower extremities and the shoulder girdle which may cause weight-bearing peculiarities affecting the spine. It is primarily the effect of the sacral base plane on the superincumbent spine which will determine lift therapy and its effectiveness in a given case. If lift therapy is employed it must be carefully controlled, as it is not sufficient to have the patient x-rayed on one occasion, apply the prescribed lift, and then forget about the whole matter. It is necessary to have the patient re-examined in 6 to 8 weeks to determine the effectiveness of the lift therapy and to make additional corrections or recommendations according to the structural changes that have taken place in the vertebral column.

The effect and success of lift therapy will be directly dependent upon the mobility of the superincumbent spine and also upon the integral structural changes that have taken place during the period of growth while the deformity was progressing. Obviously one cannot expect to attain correction of the deformity where there is torsion and structural changes in the bone architecture itself. Mobility will carry the correction only to the point permitted by the structural changes.

In many cases one realizes that complete correction of the structural deformity is impossible and lift therapy is used only as a means of relieving the arthrodial and ligamentous strain to give the patient relief from his pain. One must manage most such cases empirically and be guided by the reactions of the patient rather than one's own desire to correct the existing deformity. During the period of correction by lift therapy, musculoligamentous rehabilitation may be aided greatly by careful and judicious osteopathic manipulative treatment, together with exercises and other physiotherapeutic aids to overcome the reaction to treatment which sometimes occurs.

In the management of the structural type of scoliosis, forcible correction followed by spinal fusion is the only effective treatment known. Fusion of the spine, if successful, will prevent the progress of a developing curve, will maintain a previously gained correction, and in most instances will relieve the pain that is found in decompensating scoliosis.

Surgery is usually recommended for those patients presenting progressive and uncontrolled scoliosis or for those with intractable pain, which may be either on the convex or concave side of the curvature. In my experience it has been more frequently noted on the convex side. In approaching the problem of active correction of the deformity one is confronted sometimes with determining which is the primary curve. This determination is essential in every case. The primary curve is sometimes asymptomatic and the secondary curves are frequently painful. This is because the secondary curves are usually more flexible. The primary curve usually exhibits the least flexibility and the least response to corrective measures. The primary curve is usually the greatest curve, and the one toward which the trunk is shifted. There is usually greater rotation and vertebral wedging in the area of the primary curve and consequently the most resistance to any attempt at corrective maneuvers.

In attacking this problem one must also determine the extent of the curvature which may be of variable length and may include from four to twelve vertebral segments. The vertebra showing the greatest amount of rotation is considered the apex of the curve and upon x-ray examination the "neutral" vertebrae on either extreme are noted and marked. These "neutral" vertebrae are the ones showing the least rotation with the interspace approximately equal on either side. Measurements should be made of the angle of deviation from the normal so the effect of the remedial measures which will be applied to correct the deformity may be computed. These measurements should be made with the patient in the supine as well as the erect position. The change noted will be an indication of the flexibility of the curve.

For the correction of the primary curvature some form of plaster of paris cast is employed. The type of corrective cast will depend entirely upon the individual physician, his experience, and the facilities at hand for applying such corrective devices. In my practice I have used almost exclusively the Risser turnbuckle or wedge cast or some modification of this type. If the deformity is high in the cervicothoracic juncture I usually employ head traction in the erect position and carry the cast upward over the shoulders to the chin and occipital region. In the use of corrective casts there is always an attempt made at overcorrection, because of the tendency in all cases towards a recurrence of the deformity when such corrective apparatus is removed. In the deformities of the lumbar type and many of the lumbothoracic type, the cast should include the pelvis and thigh on the side of convexity in order to control the flexible lumbar region. Fenestration of the cast may be carried out according to the forces desired and the necessity for providing ample space for breathing and eating.

After the deformity has been progressively corrected by means of the wedge or turnbuckle, it may be desirable to apply a second cast to obtain further correction. When studies indicate and the reaction of the patient dictates that further correction is impossible, then a posterior window is fashioned in the cast to expose the operative area of the spine through which fusion is performed. In addition to the spinal fusion technics of Albee and Hibbs, today a great many men are employing iliac bone in addition to the Hibbs type of fusion as an effective means of producing the bony ankylosis and splinting which is essential for the stabilization of the curvature.

If patients have a hip spica applied it is usually necessary for them to remain in bed for 2 to 3 months. However, it has been my experience that they do equally well when they are allowed to be ambulatory after the second or third week following surgery, unless a tibial graft has been employed. In that case they are usually confined to bed for longer periods or the limb is supported either with a brace or a plaster of paris cast. These patients are all quite unsteady on their feet because of the weight of the plaster cast and they frequently fall; hence, the donor graft site must be protected against injury.

After the operative cast has been in position for about 3 months, it is removed and x-ray studies are made to determine the progress of healing of the arthrodesis. Following these studies another plaster of paris jacket is applied, but as a rule the cervical and

thigh portions of the cast are omitted. Also correction of the position of the remainder of the body is usually diminished or omitted. These casts are usually applied with the spine in slight hyperextension. Ambulation is permitted. The second cast is usually kept in position for approximately 3 months, and the need for further cast immobilization is then determined by x-ray studies which demonstrate whether or not fusion has been completed.

Immobilization in plaster, in my opinion, is essential until there is radiographic evidence of solid bony ankylosis. If ambulation is permitted too soon without this rigid type of support, a pseudarthrosis is very apt to occur at the site of bone graft. It may be safely said that cast therapy will be necessary for a period varying from 6 to 12 months after surgery.

Following the removal of the last cast, physiotherapy is employed in an effort to rehabilitate the musculature of the trunk, so the patients may resume their places in community and home life. I usually have patients wear a Taylor type of spinal brace, unless there is some muscle paralysis. If there is paralysis, I usually prescribe a crutch type of support. The length of time this support is used is directly dependent upon the underlying pathologic features which accompany the disease. If paralysis is present it may be necessary for the patient to wear some support for the remainder of his life. However, when there does not appear to be any marked disproportion in muscle tonicity, the brace may be removed when muscle rehabilitation is fairly well advanced. Whether or not the removal is final will depend upon constant clinical observation of the patient and upon his ability to maintain correct posture.

Many times thoracoplasty is recommended to correct the deforming gibbus. This operation will be moderately successful, though most patients will not be too satisfied with the end result because deformity is still apparent following the surgery. The underlying pathology of vertebral rotation cannot be corrected and this factor alone will greatly influence the results of plastic surgery on the thoracic cage. In discussing the matter with the patient and his family, one should be extremely careful to be very frank in explaining the effects of such surgery and the probability that the deformity will not be completely corrected. It would be far better to lose the case for surgery than to be faced with a suit for malpractice because of failure to produce that which was desired.

Those patients who for some reason or other refuse surgical fusion of the spine may be treated by the corrective cast therapy as described previously. However, they should be made to understand that it will be necessary to wear some type of supportive apparatus in the form of a jacket or a brace, possibly for the remainder of their lives in an effort to maintain the correction. It is imperative that both the family and the patient understand the great tendency of all these deformities to recur. It should be emphasized that if support to the spine is not applied and maintained following corrective measures, the deformity in all probability will be more severe and more noticeable than before correction.

In my opinion there is much to be done in the study of scoliosis. Probably in our lifetime the answer to this enigma will not be forthcoming. It is a challenge to the practitioners and students of the healing arts to attain better understanding of the etiology of this extremely common deformity and more of a challenge to solve the therapeutic problems which result from it.

12 S. Twelfth St.

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SALICYLATE INTOXICATION IN CHILDREN

Reasonable caution in the administration of aspirin and allied salicylate compounds for children is recommended by Dan W. Burke, M.D., in the *American Practitioner*, August, 1949, because of various reports of toxicity resulting from its use in massive doses for rheumatic fever and from their own experience with cases of accidental ingestion. Sensitivity is variable. Tolerance in children is not so extensive as in adults. Cumulative effects have been noted, after prolonged dosage.

Symptoms which appear early are hyperpnea, anorexia, and apathy. If the intoxication has not been diagnosed, there develop an intense acidosis-producing hyperventilation, dehydration which is usually mild but may be severe with fever, cyanosis, abdominal pain, fever, polyuria, and thirst. Hyperventilation is also characteristic of diabetic acidosis, starvation acidosis, prolonged diarrhea, intracranial hemorrhage and alkalosis, and differentiation should be established through the laboratory and physical findings. Nephritis and nephrosis are revealed through urinalysis and the existence of hypertension and edema. Gerhardt's test, in which ferric chloride added to urine produces a purple ring which is not destroyed during boiling in the presence of salicylates, will confirm the diagnosis.

Other common laboratory findings in salicylate intoxication are plasma carbon dioxide combining power ranging between 15.4 to 28.9 volumes per cent, normal pH, NPN values slightly raised, normal blood sugar, acid urine with acetone and diacetic acid, leukocytes, erythrocytes, casts and albumin. Spinal fluid will have no cells but reduced carbon dioxide combining power associated with reduced plasma carbon dioxide combining power. Increased blood salicylate level is noted, naturally. Prothrombin time is prolonged markedly during the second to the fifth day of treatment with salicylates and returns to normal by the eleventh day, whether treatment is continued or not.

If the toxic condition has been diagnosed in its early stage, a stomach lavage is in order. If the intoxication has progressed before detection, a cathartic is indicated. Good renal function should be established in either case. Alkali in the form of sodium-lactate in 1/6 M solution usually corrects acidosis but can be substituted by sodium bicarbonate in weak solution in the face of persisting acidosis. Glucose or lactate solutions will correct depleted stores of glycogen in the liver and also dehydration, if present. The possibility of hemorrhage should be offset by vitamin K. The infection for which salicylates originally had been given should not be ignored.

Bone Grafting Principles

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In presenting this paper on bone grafting I wish to state that it is not an original paper on the subject but is a compilation of all of the latest material I have been able to accumulate in the field of bone surgery. The increased interest in the subject of bone grafting is the result of the experience gained during and after the past war and in the reconstruction work which is being carried on by the Veterans Administration, the armed forces, and by returned orthopedic surgeons who gained unlimited experience during their active service.

The problem of bone grafting surgery has been one of interest to the orthopedic surgeon since 1697 when Salmon restored large splinters of bone back into position in gun shot wounds so that they might be joined together by callus. From this time on, progress in this field developed from the observations made that while some of the cases did heal, in most of them the fragments were extruded as sequestra following infection. Records indicate that the transference of animal bone to replace defects in the human skeleton has been attempted since the earliest era of surgery. The earliest record of a successful transplant of heteroplastic bone was in 1682 when Meekren replaced defects in a soldier's skull with pieces of bone from a dog skull. Macewen, in 1880, performed the first successful homoplastic graft when he inserted a number of chips of bone under the periosteum in a defect and found later, on examination, that they had formed a new shaft of bone through the defect.[1]

The real start of modern bone graft surgery dates from 1911 when Albee[2] introduced the technic of transplantation in which an autogenous bone graft removed from the diaphysis of a normal shaft was inserted into a bed of cancellous bone prepared at the site of lesion. All of this was done at a single operation. This first graft was done on a tuberculous spine and when it proved successful he then applied it to other portions of the skeletal system.

Albee[3] based his studies upon the supposition that if plants could be grafted successfully living tissue could also be grafted successfully by using the same principles. The three fundamental rules of plant grafting which he followed are: (1) that tissues must be applied like to like, (2) that contact must be intimate, and (3) that the parts must be immobilized. Albee also devised an electric saw which could be kept sterile and which allowed a surgeon to perform a graft in which the inlay was held in close contact with the host bone.

He found that the most important factor in the healing of a bone graft or fracture is to have the fracture ends in good apposition and to have an adequate blood supply which will allow the ingrowth of granulation tissue with the resulting ossification of bone callus. Adequate blood supply and coaptation are even more necessary in the case of the graft since the stimulus from a recent fracture to osteogenesis is lacking. The various tissues of the graft can survive for a considerable period but it is of the utmost importance to restore their blood supply and nutrition as soon as possible. If the graft is placed properly, the periosteum, cortex, endosteum, and marrow make direct contact with similar elements in the host and the soft tissues of the bone unite across the small gap. Osteoblasts next appear in this granulation tissue and determine the deposition of lime salts.

If a sufficient number of capillaries of host and graft are brought together, the entire graft will take. If not, various areas of the graft will not take and will have to be replaced. If all of the elements of the graft cannot be brought into contact with the host, every effort should be exerted to make certain that marrow comes into contact with marrow. It has been estimated that circulation is re-established 75 per cent by marrow and 25 per cent by periosteum. There is no question but that blood supply is the key to the entire situation.

Immobilization is another important factor in the production of a good graft. The viability of the graft as well as the rapidity and durability of union and the rapidity of the assimilation of the graft to host tissue all depend upon close approximation of the graft to both host bones. When rigid tissue such as bone is uniting, the least displacement may tear granulation and blood vessels or fracture the soft callus. Hence, the necessity for the most accurate and stable immobilization. For this reason the *inlay graft* is superior to the other types of graft.

When healing, the fragments and the graft must be held in rigid immobilization so that the granulations and callus are protected not only between the graft and the host but between the two host fragments. The stress of maintaining immobility falls upon the graft and under this influence the graft grows in strength and size and thus adapts itself to the stress thrown upon it. All of this is in accordance with Wolff's law which states, "Every change in the form and function of a bone, or of its function alone, is followed by certain definite changes in its internal architecture and secondary alterations in its external conformation."

It has definitely been established by Abbott and his co-workers[4] that the mature bony elements of a graft, whether in cancellous or compact bone, do not survive. Even under the most favorable conditions, the greater part of the transplanted bone will necrotize. This necrosis in itself does not greatly affect or retard the healing of the defect. The residual mass is extremely inert and sooner or later will be replaced by a creeping substitution. Only the endosteal cells survive to a degree which will produce osteogenesis. Successful transplantation can be summarized as incorporation of the graft into tissues without the development of a severe inflammatory (foreign body) reaction.

The six major indications for the use of a bone graft are:

1. To eradicate cavities or defects from cysts, tumors or other causes
2. To bridge joints and thereby provide arthrodesis
3. To bridge major defects or to establish the continuity of long bones
4. To provide bone blocks to joint motion in stabilization procedures

5. To establish union in pseudarthrosis

6. To promote union, provide fixation, or fill defects in delayed union, malunion, fresh fractures, or osteotomies.

In reconstruction procedures it is well to have as a basis an over-all view of the problem in terms of all possible factors which may have to be dealt with. The bone grafting of a simple nonunion in a healthy individual presents a problem quite different from the same operation in a generally debilitated and specifically deficient patient who has sustained severe local soft part injuries even though the latter are apparently completely healed. The x-ray pictures may be identical, but the problem is far from being the same in the two instances. Success or failure in the grafting procedures may depend upon the recognition of this difference.

SOURCES OF GRAFTS

There are three main sources from which grafts may be obtained. They may be removed from the patient himself *(autogenous);* they may be obtained from a human donor other than the patient *(homogenous);* or they may be taken from another species *(heterogenous).*

Autogenous Grafts.—Grafts of this type are usually taken from the tibia, fibula, and ilium. These three bones provide cortical grafts, whole bone transplants, and cancellous bone graft respectively.

Strength is necessary in a graft bridging a defect in a long bone. For this reason the extensive subcutaneous, anteromedial aspect of the tibia provides an excellent source. In adults, after the removal of the cortical grafts from the tibia, the condyles supply a substantial amount of cancellous bone. There has been considerable controversy concerning the role of the periosteum in bone surgery. Apparently there is no advantage in leaving the periosteum attached to the graft. There are some definite advantages, however, in suturing the periosteum over the defect. The periosteum serves a definite purpose in the leg as a limiting membrane to prevent irregular formation of callus when the defect in the tibia fills in with new bone.

The disadvantages in the use of the tibia as a donor area are: (1) that a normal limb is jeopardized, (2) that removal of the graft adds to the length and magnitude of the operative procedure, (3) that hospitalization and convalescence are prolonged and ambulation is delayed until the defect in the tibia has partially healed, and (4) that the tibia must be protected from 6 months to 1 year to prevent fracture.

The anatomical configuration of the proximal end of the fibula presents a distinct advantage in its use to replace the distal third of the radius or fibula. The entire proximal two thirds of the fibula may be removed without materially injuring the leg. In the removal of a fibular graft, care must be taken to avoid damage to the peroneal nerve, sufficient bone (at least the lower fourth) must be left to insure a stable ankle, and the graft must be removed without cutting the peroneal muscles.

Cancellous bone is removed from the ilium for wedge grafts, full-thickness grafts, and chip grafts. The latter may be obtained in any amount needed.

Homogenous Grafts.—Grafts of this type are obtained from human donors other than the patient. Up to the present these grafts have only been used when autogenous grafts were not available. Their popularity has been greatly increased since the advent of the bone bank.

Homogenous grafts are especially useful in small children where the ordinary donor sites do not provide cortical grafts large enough for bridging defects or enough cancellous bone to eradicate large cavities of cysts. They are also useful when the graft needed is so large that there is a possibility of injuring an epiphysis and producing a growth deformity. In these particular cases the graft is generally removed from either the father or the mother. Blood type or Rh factors have no bearing upon the use of homogenous bone grafts. However, malaria and syphilis in the donor should always be ruled out.

Heterogenous Grafts.—Grafts of this type are taken from another species but to date they have not proved successful. In an effort to get away from some of the undesirable effects of autogenous and homogenous bone grafting, beef bone, cow horn, and other foreign material have been experimented with. The end results have always been poor since these materials have always produced a foreign protein reaction. This reaction stops the graft from taking. Albee[3] reports that on many occasions he has removed living sheep bone grafts which had been implanted months previously but in no instance was the graft ever found to have been united with human bone.

TYPES OF GRAFTS

Single Onlay Cortical Graft.—Use of this type of graft is the simplest and most effective means of treating the majority of ununited diaphyseal fractures. This type is also used to bridge joints to produce arthrodesis for fixation and osteogenesis. It is also applicable to a limited group of fresh fractures, malunited fractures, or following osteotomies.

Dual Onlay Bone Graft.—This type is used to bridge massive defects and in the treatment of difficult and unusual nonunions. The dual onlay graft acts with a forceps-like action producing relatively good stability. When used for bridging defects the dual graft gives a better fixation, with better strength and stability, than a single graft. By using the dual graft a trough can be formed into which cancellous osteogenic material can be packed and held in position. It has also been found that during the healing process the grafts prevent compression of the cancellous bone by contracting fibrous tissue. This type of graft can also be used to good advantage in the treatment of a nonunion near a joint. The distal element is usually osteoporotic while the joint fragment is largely cancellous with only a thin cortex. Wire fixation will cut through the bone while the screw threads will not hold firmly in the soft bone. The dual onlay graft protects these areas and at the same time gives good fixation.

Inlay Graft.—This type is formed by cutting a rectangular defect into the cortex of the host area and then fitting a slightly smaller graft into this slot. This is especially applicable to procedures of arthrodesis.

Sliding Inlay Graft.—This type is also used in nonunions, especially in the tibia. The fragments are aligned and parallel cuts are made in the longer fragment and extended across the fracture site into the shorter fragment. The portion of bone removed from the longer fragment is slid across the fracture site into the shorter fragment. The shorter fragment graft

is placed at the end of the slot which was left open when the long fragment graft was slid across the fracture line. These procedures are simple and fast but have the disadvantage that if the graft fails to take, a considerable portion of the fragments have been removed and subsequent surgery is rendered more difficult.

Multiple Chip Grafts—Cancellous Grafts.—These grafts have a wide application as cancellous bone is the most efficient osteogenic material available. Cancellous bone is especially useful in eradicating cavities or defects from cysts or tumors, for establishing a bone block, and for wedging in osteotomy sites. Since cancellous bone is soft and fragile it is relatively easy to press into any nook or crevice. In practically all bone grafting procedures where cortical bone is used for fixation, supplementary cancellous bone or chip grafts are employed to promote union and early healing. Because of the maximum osteogenic requirements cancellous bone grafts are especially applicable to arthrodesis of the spine. Unless considerable strength is required the cancellous graft fulfills most requirements. Tests have shown that cancellous grafts amalgamate with the host much more rapidly than cortical grafts.

Whole Bone Transplant.—Such transplants are used when it is necessary to bridge long defects in the diaphyseal portions of the bones of the upper extremity, if the nonunion is not too close to the joint. The fibula graft is stronger than a full thickness tibial graft with an equivalent amount of cortical bone. The removal of a fibial graft weakens the leg less than the removal of a large tibial graft. For the average grafting procedure the middle third or the middle half of the fibula is selected. Care must be taken to avoid damage to the peroneal nerve. The lower one fourth of the fibula must be left to insure a stable ankle joint.

POSTOPERATIVE CARE

A careful postoperative regime must be carried out to improve the chances of a successful take and to shorten rehabilitation time. It is a great mistake to allow a patient to lie around in plaster either at home or at the hospital passively waiting until x-ray findings indicate that the graft is strong enough for activity without plaster support.

1. The period of fixation will vary with the condition and the individual patient but the average period of immobilization runs from 12 to 24 weeks. X-rays should always be taken with the cast removed to determine the true condition of the operative site.

2. The systemic use of chemotherapy is indicated as prophylaxis against the development of latent infection.

3. Careful attention should be given to deficiencies in the systemic factors involved in wound healing and in the control of infection.

4. The patient should be mobilized as early as possible to improve circulatory and metabolic activity as well as the patient's morale.

5. Frequent active exercise should be given to all joints in the extremity which the immobilization will allow and is of definite value in maintaining active and efficient circulation.

6. Following the removal of the fixation apparatus frequent and judicious use of physiotherapy measures will be of material aid in establishing functional rehabilitation.

7. Brace support after the removal of plaster fixation should always be used until x-ray examination shows complete union.

I hope that this brief resume has been complete enough to show the importance of bone graft surgery in reconstruction work despite the fact that we are now working in a period which will be known in medical history as the metallic age.

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SPECIALIZATION IN MEDICINE

I do think that, from the standpoint of any future planning which we might undertake, particularly as to the training of orthopaedic surgeons, we should take stock of the relative importance of childhood orthopaedics and adult orthopaedics. Each is important to the other. I do not believe that a person with training only in the orthopaedic surgery of children can comprehend or handle the problems of adult orthopaedics; nor do I believe that one trained only in adult orthopaedics can comprehend or handle the problems of childhood orthopaedics. I would go further and say that one trained only in adult orthopaedics cannot understand the problems of adult orthopaedics as well as one who has also had the advantage of training and experience in the problems of childhood orthopaedics, for many of the problems of adult orthopaedics stem directly from orthopaedic conditions of childhood. This is particularly true of many of the painful hips found in adults, as well as of many other disturbances of growth and development which produce painful and disabling conditions in adult life.—Ralph K. Ghormley, M.D., *The Journal of Bone and Joint Surgery*, July, 1949.

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Evaluation of External Skeletal Fixation

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The evaluation of the treatment of fractures and other bone deformities and diseases by external skeletal fixation is difficult because of the almost impossible task of determining the experience of those who have attempted to use this method and the lack of proper determination of the end results. For instance, when the Stader splint was made available generally and so much publicity was given to this type of fixation, many surgeons and general practitioners, who knew little or nothing about fractures, purchased the equipment and attempted its use with the only possible results—failure and disappointment.

Many thought that external fixation was an easy way out for the care of fractures even though they had no particular training in fracture treatment. In addition, results reported by some clinics, such as that of Roger Anderson and those of others who specialize in the use of external fixation, were usually good. Many felt that here at last was a short-cut method for the care of fractures. Promiscuous use of various apparatus produced disappointing results and the outcome has been that this method has fallen in disrepute. Even many former enthusiasts have thrown the hardware into the closet where rust corrodes the pins, screws, and gadgets.

External skeletal fixation, generally speaking, is not an easier, but a more difficult method of handling fractures. It requires more mechanical skill, more attention to details, and more frequent checking of position than the usual methods. It requires constant watching of bone reaction to determine the effect of the pins, the traction, and the skin. All of these details require the personal attention of the surgeon. One always runs into trouble when he tries to turn them over to someone else, which is one of the reasons that fracture cases are difficult to handle with external skeletal fixation in larger clinics.

Other factors which I think have been disappointing, generally, are that external skeletal fixation has not reduced the time necessary for healing or the percentage of nonunion, nor has it increased the mobility of joints contiguous to the fracture in relation to time or eventual recovery.

In August, 1947, in an article on "External Skeletal Fixation and Its Clinical Application,"[1] I made the following statement:

> I want to emphasize that external skeletal fixation is not a substitute for other types of treatment, nor a panacea for the treatment of fractured bones. It is another arrow in one's quiver to use when judgment and experience dictate its use. The same principles apply to the use of this type of fixation as applies to general fracture treatment, namely: proper reduction by manual or other means, and then fixation with a cast or external apparatus. In selected cases, such as those with displacement or overriding, external skeletal fixation is of great value and should be the method of choice.

I want again to bring out that this method of fixation is only for selected cases. When used properly it is a good method of fixation, but it is not a short cut even when done properly and watched carefully; it may sometimes make one wish he had never heard of external skeletal fixation.

Proposed advantages to this method, in my experience, have not proved to be significant. For instance, it was hoped that the use of this method in fractures of the shaft of the femur would not only lessen the rather long time required for recovery by allowing the patient to be ambulatory, but would also reduce the period of stiffness in the knee over that following traction and recumbency. However, when the pins are placed through the quadriceps, or even more laterally through the fascia lata and muscular groups, fixation takes place in these muscles and natural quadricep exercise is made more difficult than with traction or internal fixation. In addition, fascitis is produced, which takes considerable time for recovery. In spite of the fact that the patient may be ambulatory, recovery time may be increased rather than decreased, both as to quadricep function and flexion and extension of the knee.

There is considerable adverse opinion with regard to this type of fixation. For instance, J. S. Speed, and Hugh Smith[2] say:

> There are several fairly standard and widely known types of external skeletal fixation apparatus. In the hands of a limited group, this method of treatment seems to work satisfactorily. We cannot, however, share their enthusiasm. Our experience with a fairly substantial series of consecutive fractures has been most disappointing; in a large percentage, slow unions or nonunions followed. Perhaps in more adept and experienced hands, these objections are not valid. Regardless of one's dexterity, the method has three disadvantages: (1) the patient requires a great deal of attention and care; (2) hospitalization is relatively prolonged; (3) the multiple pins which protrude through the skin into the bone present a constant threat of infection.

In Watson-Jones' Fractures and Joint Injuries[3] the following statement appears:

> The disadvantages of the technique are: (1) except in the skillful hands of Roger Anderson himself, there is danger of distraction of the fragments and delayed union, or of inadequate immobilization of the fragments and non-union; (2) in the hands of every surgeon, no matter how skilled, there is danger of infection of the pin tracks. Precautions can, of course, be taken to avoid gross infection, but some degree of low grade infection of the pin tracks is inevitable; it must develop sooner or later. In certain regions a low grade infection is unimportant, but in other regions it may cause serious joint stiffness. If the treatment of a fracture necessitates perforation of the skin at all, it is surely better to make a proper incision, use internal fixation, and seal the incision under strict aseptic control, rather than to leave a continuous track occupied by a foreign body passing from the outside air through skin and soft tissue to bone. The method has not been received with favour in this country. Many of the traction machines which were distributed at the outbreak of war have been recalled, and others are now accumulating dust in dark cupboards.

On the other hand Dwyer and Murry[4] made a report on 252 cases in which they said that only 2 cases of osteomyelitis (less than 1 per cent) occurred at the pin sites, and in one of these, infection was proved to be hematogenous rather than of external origin. "There were 4 cases (1.6 per cent) of delayed union, 4 [cases (1.6 per cent)] of malunion . . . and 3 (1.2 per cent) of nonunion, making a total of 11 (4.4 per cent) in which results were unsatisfactory. A thorough study of all followup films revealed no ring sequestra. Five (2 per cent) of the patients expired before treatment was completed."

My own experience with external skeletal fixation is based on its use in 73 cases, including fractures of the os calcis, intertrochanteric fractures of the femur, displacements of tibia and fibula and radius and ulna, fractures of the shaft of the femur, condylar fractures of the femur, fractures of the clavicle, and fractures of the radius. These were selected cases in which I felt external skeletal fixation was the method of choice. There were three infections, only one a serious one, in which 1½ years following the fracture osteomyelitis developed. There were no nonunions.

While external skeletal fixation, as it has been discussed here, is a relatively new procedure, the principle of external fixation has been used for many years—ever since Steinmann introduced his pin. Most orthopedic surgeons use external fixation in a variety of ways. It is not uncommon for many of us to use Steinmann pins incorporated with a cast in fractures of the tibia and condyles of the humerus and in fusion operations on the knee, or to use screws in spiral fractures of the tibia and many others. All of us will probably continue to use the principles of external skeletal fixation in one way or another, applying the most recent development to a small number of cases.

CONCLUSIONS

1. External skeletal fixation, in spite of all its disadvantages, has some value in selected cases.
2. Those who are not familiar with this method of fracture treatment should not employ it because it is the most difficult and time consuming method in use.
3. The method should not be entirely discarded because used with careful judgment, it is the method of choice in many types of fractures.
4. External skeletal fixation neither diminishes the time of disability nor the incidence of death; it neither promotes osteogenesis nor lessens the amount of joint stiffness; as a matter of fact, unless it is properly used, the result may be to the contrary.

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Indications and Contraindications of Intramedullary Nailing

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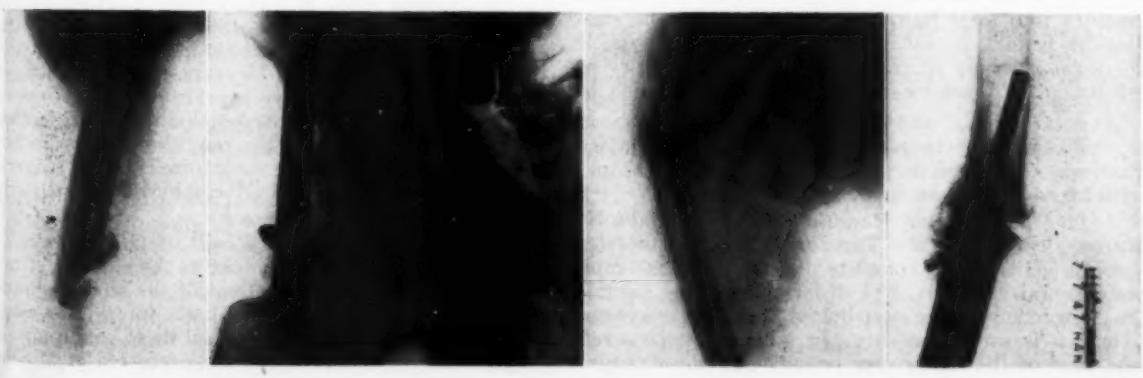
The use of the intramedullary nail is gradually becoming a popular method of treatment in fractures of the long bones. It has been hoped by those doing clinical research with this procedure that it will not become too popular before they have an opportunity to evaluate its status in the field of fractures and their treatment.

The advantages of this treatment are as follows: less surgical trauma, application of a simple prosthesis, decrease in number of bed days, less time in an immobilizing apparatus or cast (if any at all), and rapid formation of luxuriant callus. Early use of the involved extremity reduces the possibility of muscle atrophy and improves the patient's mental outlook.

The disadvantages of this method have led to a better understanding of its indications and contraindications. Intramedullary nailing is definitely contraindicated when its use might increase the possibility of infection, interfere with epiphyseal growth, or complicate the care of the patient so as to endanger his life. It is not advisable to use an intramedullary nail on a compound fracture or in the repair of ununited or malunited fractures in which osteomyelitis has become a complicating factor. Neither is it advisable to traverse an epiphyseal plate with an intramedullary nail; the end results of such a procedure are obvious. Violating a joint surface with an intramedullary nail is admissible in only a very few carefully selected cases and in them the nail should be introduced in such a fashion as to be easily removed at the earliest possible time.

Some of the problems encountered in the use of the intramedullary nail have been mainly of a mechanical nature. One of the first undesirable results was

Fig. 1 Fig. 2 Fig. 3 Fig. 4



the slipping of the nail into the medullary canal and having the patient sense the motion of a foreign body within the shaft of the bone on weight-bearing. Another undesirable result was erosion of the metaphysis and protrusion of the nail into an adjacent joint. These problems have more or less been solved by the use of a washer and stainless steel wire threaded through one end of the pin and attached to the bone at the point of introduction of the nail. This procedure also precludes the possibility of the nail's slipping out of the shaft at its point of entry (Figs. 1 and 2). It should be noted here that the metals used in this procedure should be identical.

Bending of the nail the first few weeks following surgery may be due to the use of improper metal (Fig. 3). Because of the existence of the possibility of the nail's bending it is probably a good idea to use plaster of paris immobilization long enough for the development of a fair amount of callus in a patient of heavy muscular stature.

Exuberant and immature callus has been seen to occur as the result of too great pressure within the medullary canal from a nail with a diameter greater than three fourths that of the smallest portion of the canal. If, on the other hand, the nail is too small, the motion about the fracture site allows the development of the same type of callus. When this occurs it is usually necessary to remove the nail and allow resorption of the extra callus and continuation of normal bone formation (Fig. 4).

The possibility of the occurrence of fat embolism after intermedullary nailing cannot be excluded because of its high incidence after bone surgery. However, it does not seem to occur with any greater frequency in this procedure than in other fields of bone surgery.

The exact technic of introduction of intramedullary nails has been well described in various articles.[1,2,3] However, it should be remembered that this operation is relatively technical and the contraindications and problems that I have called to attention should be kept in mind.

The method of fracture treatment by intramedullary nailing embraces the three main principles of the care of injured bony tissue: anatomical reduction, fixation, and mobilization of adjacent muscles and joints.

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Painful Hips in Adults

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Painful hips in adults have often been described in orthopedic literature under various names, including malum coxae senilis. However, I believe that the one selected as my title is the best from the standpoint of a descriptive term. Discussion in the past has not been based on the etiological background, although this condition is merely an end result of a pathological process which has its roots deep in the past of the individual. This point cannot be overemphasized, because the presence of the condition indicates that some preexisting condition should have been better handled.

In this paper etiological background is to be the phase considered rather than treatment of the end result. I do not wish to minimize such treatment, but I want to put the emphasis where it belongs in the discussion of this problem.

In years past, painful hips were simply classified as hypertrophic hips, with no regard to etiology. In many cases scrutiny of the patients and a more careful inquiry into their past histories will reveal the etiological factor. In other cases, it will be impossible to learn anything of significance from the history as to the exact causative factor.

CLASSIFICATION

Painful hips in adults may be divided into ten etiologic classifications. The discussion in this paper will be based on such a division.

1. *Painful Hips Resulting from Infection in Infancy or Childhood.*—Three things can result from such infections: (a) complete destruction of the capital femoral epiphysis, (b) dislocation of the hip due to destruction of the acetabulum, and (c) ankylosis. The last is rare in infancy. In some cases, however, the head of the femur may be only partially damaged and a deformity may result, which will lead to hypertrophic changes later in life. Results in infections in children are similar to those produced by infections in infancy, except that dislocation and sequestration of the entire epiphysis occur less commonly in childhood than in infancy. Damaged femoral heads are seen more often in childhood than in infancy. This condition often leads to hypertrophic changes later on in adult life.

2. *Painful Hips from Legg-Perthes' Disease.*—Legg-Perthes' disease is a type of aseptic necrosis of the femoral head. Various changes take place that often lead to painful hips later on in life. During the third and fourth decades evidence of hypertrophic changes develops. There are pain and limitation of motion. Obviously, the way to avoid the more severe stages of this condition is to treat the childhood affliction more effectively.

3. *Painful Hips Resulting from Slipping of the Capital Femoral Epiphysis.*—Slipping of the capital epiphysis is a well-recognized entity, occurring usually between the ages of 10 to 15 years. It often leads, in later years, to an extensive hypertrophic condition of the involved head, with marked limitation of motion and considerable pain. This condition occurs rather early in adult life because a deformity of a femoral head in a severely displaced epiphysis occurs early and is marked.

4. *Painful Hips As a Result of Old Injuries.*—Hypertrophic changes may occur as the result of fractures around the hip, dislocations of the hip, or simple trauma without fracture. The basis for the development of a hypertrophic stage in all these conditions is aseptic necrosis. Here again the preferred treatment

is prophylaxis such as prevention of weight bearing sufficiently long after injury has taken place. Articular repair proceeds slowly and any weight bearing during the period of repair will cause irregularity of the contour of the head, which will lead to a gradual onset of hypertrophic changes. If the slightest evidence of aseptic necrosis appears, limitation of activity and even the use of crutches without weight bearing should be prescribed. Protection against weight bearing is the most important form of treatment known to date for aseptic necrosis of the hip joint.

5. *Painful Hips from Congenital Inadequate Acetabulum or Primary Genetic Dysplasia of the Acetabulum.*—In many cases where frank dislocations have not developed, a rather severe type of hypertrophic arthritis develops due to mechanical strain, which causes development of traumatic arthritis to be added to the mechanically inadequate hip. In these cases early x-rays of the hip are essential if the condition is to be found. Any transient pain in the hip or even a slight limp should be investigated in childhood. This is the only way the true condition will be found while it is still amenable to treatment. When the condition is found, before hypertrophic changes take place, it is good to advise the patient not to indulge in strenuous sports and activities which exerts great strain on the hip. The patient is also advised not to become overweight. He is warned to rest the hip at the slightest sign of any pain or limp.

6. *Painful Hips Arising From Congenital Dislocation.*—Congenital dislocations contribute their share to the production of painful hips. In congenital dislocations that have not been reduced, hypertrophic changes usually do not develop. It is the hip that has been reduced, that is the seat of hypertrophic changes later on in life. However, in cases in which a false acetabulum has developed, painful hips may and do at times occur. This is true because a false acetabulum is inadequate from a mechanical standpoint and the mechanical relationships of head to acetabular surface are so disturbed that ultimately hypertrophic changes develop.

It is surprising to know that in many patients with a perfectly reduced congenital dislocation, hypertrophic changes do take place to a severe degree in later life. I believe this is due to the trauma incident to the reduction. These changes are not less frequent than those seen in changes in the shape of the femoral head, such as occur in late Perthes' disease. Incomplete reductions as well as frequently repeated reductions leave traces of trauma that in time lead to permanent changes in the contour, as has been previously mentioned. In other words, we are dealing again with a form of aseptic necrosis due to trauma. Therefore, all patients who have had congenitally dislocated hips should be carefully rechecked at stated intervals, so that the nutritional state of the head of the femur may be carefully followed. On can readily see that all the factors mentioned contribute to the causation of such lesions as are being described.

As a prophylactic measure the most important point to be stressed is the early recognition of congenital dislocations of the hip, and by this I mean recognition before weight bearing. It is the weight-bearing element in congenital dislocations that interferes with the nutrition to the upper femoral epiphysis, thus setting up the train of pathological processes which eventually develop into some form of bone destruction and subsequent hypertrophic changes. Early recognition of dislocation should be followed by the most gentle and complete reduction as the second step. There is no place for violent trauma in the treatment of congenitally dislocated hips. In many cases the most radical form of treatment, namely surgical reduction, is often the most desired, because the head can be gently replaced without trauma and complete reduction can be accomplished. I believe that all hips that cannot be reduced by gentle manipulation should have the benefit of surgical exploration and reposition by surgical methods. I must stress the point that the mere fact that a surgeon reduces a congenitally dislocated hip is no guarantee that future trouble will not result. It depends on how he does it.

7. *Painful Hips Arising from Otto Pelvis.*—This type of lesion, although it is not seen frequently, nevertheless contributes a considerable number of cases and should be included in this discussion. Otto pelvis is one which shows intrapelvic protrusion of the acetabulum. This condition is characterized by a variable degree of deepening of the acetabulum. This deepening may arise either from an infection of the acetabulum or from some type of malacic disease involving the bone about the hip joint, in the course of which gradual sinking in of the acetabular floor has occurred. Once the condition has occurred, a mechanically imperfect hip joint results which leads to variable degrees of hypertrophic change. These in themselves will result in further limitation of motion of the hip joint, thus setting up a vicious cycle which will lead to the development of painful hips. The usual time for the development is the fifth or sixth decade of life; however, it has been known to occur in the early thirties. The condition is often bilateral; therefore, selection of the type of treatment must be carefully made.

8. *Painful Hips Arising from Osteochondritis Dissecans.*—This condition is not frequent. When it does occur, usually results in a traumatic type of arthritis. It is usually a disease of adolescence; at least the pathological condition initiating subsequent changes takes place during this time. Invariably osteochondritis dissecans occurs during epiphyseal development. Many patients, however, do not show any type of clinical symptoms until adult life. This is not understandable with our present knowledge, because the etiology of the condition is not completely understood. One could go off on many tangents discussing the etiological factors; however, it would not be very profitable to do so.

Preventive treatment should begin with early x-ray examination of hip joints when there is a limp or pain. If we would but heed these danger signals and thoroughly investigate all hip joints presenting them, we would be in a better position to treat this type of lesion adequately. Early recognition of the condition is most important as is the early removal of loose bodies when they are found. In cases in which no loose bodies are found and in those in which the condition is found in an early stage, conservative treatment, consisting of prevention of weight bearing by means of crutches, will sometimes lessen the arthritic changes. However, I do wish to stress again, that until the exact etiological factors are determined, this condition will be treated by more or less hit-and-miss methods.

9. *Painful Hips Resulting from Osteochondromatosis.*—This condition, even more rare than osteochondritis dissecans, does occur occasionally and involves the hip, with subsequent marked arthritic

changes, if not picked up early. In the presence of synovial osteochondromatosis, osteocartilaginous bodies are found within the joint. They cause repeated minute trauma to the articular surface and as a result, various types of traumatic arthritis have their inception. The importance of removal of the osteocartilaginous bodies as soon as they are found cannot be overstressed. As a prophylactic measure, therefore, surgical removal of all loose bodies in the joint should be carried out in all cases of osteochondromatosis of the hip joint. This is not a simple procedure and in many instances there may be recurrence; as often as they recur, they should be removed. This is the only protection that can be offered against an extensive osteoarthritis of the hip joint. There is no drug treatment that will do anything toward prevention of the formation of loose bodies in synovial osteochondromatosis.

10. *Painful Hips Resulting from Other Types of Arthritis.*—It is unusual to see hypertrophic arthritis develop as a sequel to infectious arthritis. However, it may occasionally occur in adults following low-grade arthritis of an infectious nature. Also it may follow chronic infectious rheumatoid arthritis, or spondylitis deformans. In this particular case, the damage to the joint surface may be so severe that hypertrophic changes develop, and the usual chain of events follows.

THERAPY

I think you will be well aware by this time that the most important part of treatment of painful hips in adults is in the prophylaxis. There is no other condition where the statement that one ounce of prevention is worth more than a whole pound of cure holds more true. If we do not heed this dictum, we will end up with treating a lot of end results, and if we study statistics very carefully, we will find that the results of such treatment do not constitute an especially bright spot in the annals of orthopedic surgery. However, we must take a realistic view. Those adults presenting themselves for treatment of this condition cannot be turned away glibly with the remark that nothing can be done. We must encourage them from every possible angle. A definitive type of surgical approach must be selected very carefully. We must be willing to spend a great deal of time selecting that type of surgical treatment which is best suited for the individual problem. If we pick the surgical procedure at random we will only meet with failure and the patient, instead of being benefited, will be further discouraged because of the poor end result. I do not wish to be a complete pessimist along this line, but I do want to leave the thought that the proper selection of treatment, and especially surgical treatment, is of the greatest import.

In cases where the acetabulum has not developed to any extent, a shelving operation to increase the roof of the acetabulum is of marked benefit. If done early and in properly selected cases much of the pain is entirely relieved and extensive osteoarthritic changes are prevented. However, after arthritic changes have taken place, the shelving operation is of very little use and some type of surgical fusion should be considered.

In cases of monoarticular arthritis, where the etiological factor is unknown, I feel that cup arthroplasty is definitely indicated. This procedure is also of some value in those cases of Otto pelvis, where the condition is not too extensive and especially where the condition is bilateral. If the condition is bilateral, I would hesitate to suggest a double arthrodesis, but again the surgical procedure should be selected that will give the greatest amount of benefit in overcoming the mechanical handicap encountered.

In conditions arising from arthritic hips resulting from old congenital dislocations and slipped epiphyses a choice must be made between a surgical stabilization and a cup arthroplasty. In these problems many factors must be taken into consideration. We must evaluate the economic status, the physical and mental make-up of the individual, and also his or her ability to understand exactly what is going to be done and what can be expected from the end results. Some patients have a dread of a stiff hip. Immeasurable harm would be done by stiffening the hip of such a patient, even though pain were alleviated. With proper selection of patients for cup arthroplasty I have found that there is an increasing amount of relief from this procedure.

There is one other procedure that has come to the fore recently in the treatment of painful hips in elderly people. That is section of the obturator nerve. Up to the present I have performed about fifteen of these operations for hypertrophic painful hips in adults, regardless of the etiological background. I have made an anterior approach and have isolated the obturator nerve and dissected it well up into the obturator foramen before sectioning it. So far, results in the fifteen cases have been very encouraging. There has not been a complete failure in this series. More than ten of these patients have maintained for more than a year good clinical results, that is, they have been completely free of all painful syndromes; however, in many cases limp does continue to be present.

In some cases section of the obturator nerve has been associated with a drilling operation. I wish to state that the drilling of painful hips, when followed by sufficient rest and immobilization, has done much to relieve the pain in many cases. We must constantly remember that the foremost thing in the minds of most of these patients is the relief of pain. They are not interested primarily in the change of mechanics of the hip joint and inasmuch as some of these patients are elderly, we must become cautious and go along with their request for the relief of pain alone.

A word of caution is necessary here. Before the obturator nerve is attacked surgically, it should be injected with novocain in order to establish its relationship with the painful hip. I have also used with some degree of success a novocain block of the lumbar sympathetics. In one patient approximately 55 years of age, a right lumbar sympathectomy was done for some type of vascular disease of the extremity. The patient volunteered the information that following the sympathectomy, the pain in the arthritic hip on the same side was markedly decreased. This is merely an observation.

CONCLUSION

In closing, I wish to state that one has to take a rather panoramic view from a therapeutic standpoint. We cannot be too definitive or too specific; we should make our treatment conservative, and when surgery is definitely decided upon, the surgical procedure should be one that is best suited for the condition at hand.

This review has been presented with the hope that it will stimulate earlier recognition of the lesions leading to painful hips and that more effective treatment of them will be achieved at the time of their inception. Only thus will the processes leading to the final painful condition be minimized or halted.

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Degenerative Lesions of the Lumbar Spine

Their Diagnosis and Therapeutic Management

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Degenerative lesions affect the various joints and supporting structures of the spine, including the facets, intervertebral joints, and intervertebral disks. Like degenerative lesions of joints elsewhere in the body, the changes in the spine are found commonly after 40 and almost universally after 50 years of age.[1] The lesions of the spine which will be considered in this paper are spondylosis, spondylarthrosis, degeneration of the intervertebral disk, and, for differential purposes, rheumatoid spondylitis.

Spondylosis is a degenerative lesion involving the vertebral bodies, characterized radiographically by lipping or spur formation of the articular margins. In cases of long standing the osteophytes of the adjacent vertebrae may be seen bridging the interspace. This condition is termed by various authorities as osteoarthritis, spondylitis, hypertrophic arthritis of the spine, senile spondylitis, and degenerative spondylitis. It is obvious, however, that such terms are misnomers, since there is no true inflammatory involvement of the vertebral bodies or intervertebral joints as the suffix, "itis," implies.

Spondylarthrosis, on the other hand, is a degenerative lesion of the articular facets, which are true joints, having an articular capsule with an adequate nerve and blood supply. We are aware that weight-bearing in the vertebral column is placed primarily on the vertebral bodies, the intervertebral disks, and the nuclei pulposi which distribute the force of weight-bearing mechanics. The function of the facet is to allow motion and direct it toward the area in which the plane of development of the facet allows. When the facets are developed asymmetrically, as noted in the majority of patients, the direction of force and motion in the vertebral column is altered and one facet may receive more stress and strain than the contralateral facet. As a result, the weight which is normally distributed through the vertebral bodies is displaced into the facet structures, causing excessive wear and tear on the joint margins and periarticular soft parts. Over a period, as the result of a trophovascular disturbance, degenerative changes occur with alteration of the articular margins of the facet, in the form of arthrosis. As in spondylosis, it is the joint margins which are primarily at fault and the secondary manifestations are those which occur in the periarticular structures.

As a result of altered weight-bearing mechanics, in cases of long standing, degenerative changes may occur in the intervertebral disk, due to a trophovascular change in this structure. This is demonstrated radiographically by narrowing of the intervertebral joint space.

Many factors have been considered as the cause of these degenerative lesions, such as infectious, circulatory, endocrine, and metabolic disturbances, but their exact relationship has not been determined in human beings. Trauma resulting from repeated mild strain or microtrauma due to faulty body mechanics or occupational strain is believed to be the etiological factor.

Faulty body mechanics may result from obesity, sacral base plane unleveling, scoliosis, asymmetry of the facets, or any structural abnormality which would produce stress and strain on the vertebral column. Occupational stress or strain of any type may initiate or stimulate a degenerative process, if continued over a sufficient period.

Many individuals with extensive pathological changes are free from symptoms, while the severest complaints may be associated with slight degenerative changes. When symptoms do arise they usually develop gradually unless aggravated by acute trauma. The most frequent manifestations are stiffness and discomfort which are especially noticeable following rest and which improve with activity. Late symptoms, with increasing degenerative involvement, may include varying degrees of limited motion and disability as the result of muscular spasm.

Laboratory findings do not provide any positive diagnostic information for the degenerative lesions. The diagnosis is based upon the radiographic findings and the symptoms which the patient presents. The various orthopedic tests, such as the Goldthwait, the Lasègue, the Fabere-Patrick, the Laguerre, and the Lewin, are of value in localizing the involvement.

The first thought in the management of these conditions is the prevention and elimination of provocative factors. In some individuals no definite precipitating factor or deficiency can be discovered. In most patients, however, a variety of presumptive or definite exciting and contributing influences are found.[2] It is, therefore, understandable that every patient must be approached individually, although certain basic principles of therapy, which include general and local measures, are followed.

General measures are utilized in an effort to relieve discomfort and to improve the patient's physical and mental condition. Since trauma, whether the result of faulty body mechanics or occupational strain, is believed to be the prime etiological factor, it should be eliminated. If the trauma is due to postural disturbance, that should be corrected. If it is the result of occupational strain, it is many times necessary to change the duties of the individual. Since obesity, indirectly, produces trauma by increasing the amount of strain on the weight-bearing joints, it is imperative to normalize body weight.

Patients suffering from degenerative changes frequently have exacerbation of their symptoms as the result of barometric changes and dampness. It has been observed that these patients are more comfortable in warm, dry climates. Since it is not economically possible for many individuals to seek such an enjoyable atmosphere, it is most important that they avoid drafts and dress properly in damp and cold weather.

One of the greatest single factors to overcome is the fear of invalidism. Patients must, therefore, be informed that their condition is the result of an aging process caused by wear and tear on the affected joints. They should also be told, however, that the joints that have already been damaged and distorted cannot be restored, but proper care, over a long period, will provide considerable comfort. Unless proper methods are followed to prevent worry and emotional disturbance,

whatever the origin may be, the response to therapy will be retarded.

Rest of the affected joints is of prime importance in delaying the progress of degenerative lesions. It is not usually mandatory, however, except during the acute stages, resulting from sudden trauma or superimposed infection. If possible, rest periods during the course of the day will be beneficial and advisable.

Since arthrosis merely expresses the changes in and about the joints which result from wear and tear, it is obvious that diet is of minimal importance in the therapeutic management. The purposes of a dietary regime are to reduce body weight, which should be managed judiciously, to provide for the patient's need for vitamins, minerals, and proteins, and to insure optimal nutrition.

It is the opinion of the majority that foci of infection have no relationship to the form of lesion under discussion. No spectacular cures, therefore, should be promised the patient by the removal of infected tonsils, teeth, gallbladders, et cetera. When definite focal infection is present, elimination of the focus is indicated, but not with the expectation of any specific effects on the arthrotic joints. We are all cognizant of the fact that many tonsils, teeth, appendices, and gallbladders have been removed with results that caused disappointment on the part of both patients and physicians.

It has been my observation that vitamin D in the form of Ertron or Darthronol has given palliative relief to a number of patients. Although the low-back manifestations are not relieved in all patients, its use is worthy of consideration.

Local measures for the management of degenerative lesions are utilized in an effort to relieve the involved joints and to ward off and correct disability.

Osteopathic manipulative treatment is one of the greatest single therapeutic measures in the management of these conditions. It is impossible to prescribe any definite technic for the management of these cases, since each patient must be considered individually. It is my belief, however, that passive activity and springing of the spine are more conducive to recovery than repeated active mobilization.

Pain may be aggravated by the use of diathermy, apparently due to increased congestion in the periarticular soft parts. External heat, in the form of infrared radiation, seems more effective in the majority of instances.

Exercise of the involved joints, within reasonable limits, is desirable in order to avoid secondary fibrositis. Many individuals overexercise in a frantic effort to preserve joint function. This should be discouraged. In acute stages, active and passive exercise should be used several times daily through the normal range of motion. As the acute symptoms subside, these exercises may gradually be increased as to the range of motion and the period of exercise.

Since the correction of faulty posture can help greatly in bringing the symptoms of degenerative lesions into quiescence and can aid in preventing recurrence of symptoms, all postural defects should be corrected. It is believed that any joint which has been affected with a degenerative process cannot become quiescent and again function normally unless all stress and strain are removed. While the correction of faulty posture is not a cure for degenerative lesions, it is essential to the treatment if patients are to recover with minimum disability, if they are to have function which approaches normal when they again become active, and if they are to remain free from arthrodial symptoms.[3]

When pain and muscle spasm are acute or refractory to simple medicinal, physiotherapeutic, and other measures, local and regional block often provides an effective adjunct until the symptoms finally subside.[1] This form of therapy is particularly valuable when muscle spasm is present and when there are secondary fibrositic changes about the joints.

External stabilization of the lumbosacral area, in the form of a Knight spinal brace or a corset type of support is an important adjunct in the therapeutic management. Internal fixation by means of facet arthrodesis as it applies to the lower lumbar segments has been effective in controlling symptoms in selected cases.[4] However, it should only be considered if there is definite radiographic evidence of a spondylarthrosis, when all other pathological entities which might produce similar low-back manifestations have been eliminated following exhaustive study, and if satisfactory results have not been obtained following conservative management.

Radiation therapy is frequently beneficial in the relief of symptoms by reducing the edema of the juxtaarticular area and involved nerve structures. These changes are the result of increase in the blood and lymph flow as well as normalization of the chemistry of the part.

For purposes of differentiation, rheumatoid spondylitis will be discussed in regard to its etiology, diagnosis, and therapeutic management. This disease is also known as atrophic spondylitis, Marie-Strümpell disease, rhizomelic spondylitis, spondylitis ossificans ligamentosa, et cetera. However, rheumatoid spondylitis is the term used by the American Rheumatism Commission to designate a rheumatoid involvement of the spine, even though actual inflammatory changes do not occur in the intervertebral joint, as the term spondylitis would imply. I prefer to refer to this condition as rheumatoid spondylarthritis since the most extensive pathological changes occur in the facets and not in the vertebral body or intervertebral joint. The term, "rheumatoid spondylarthritis," therefore, will be used throughout the remainder of the discussion, in preference to the term, "rheumatoid spondylitis."

Rheumatoid spondylarthritis varies from the degenerative lesions in that there is actual inflammatory involvement of the joints, with resulting deformity, destruction, and ankylosis. Spondylarthritis of the rheumatoid type may occur at any age. The peak incidence, however, occurs between the ages of 20 and 30. The disease is more common in the male by a ratio of 4:1. When the disease manifests itself for the first time during middle or advanced age, the likelihood is that it has existed in latent form for some time, producing few if any symptoms, until an exciting agent produced a flare-up.

The onset is usually insidious and the initial symptoms are slight discomfort, soreness, darting pains, and stiffness. Frequently these premonitory symptoms progress unrecognized until marked changes have occurred. In some instances the attack begins with marked constitutional symptoms and great discomfort. Regardless of its onset, it usually progresses to increasing deformity, destruction, and ankylosis.

Pain is frequently quite severe during the early stages, before ankylosis of the spine develops, but subsides as ankylosis and ossification of the spinal ligaments occur. The discomfort is usually the result of spasticity of the paravertebral and deep muscles of the back and inflammatory involvement of the peri-

articular soft parts. As the pathology continues, muscular weakness gradually develops and atrophy of the spinal, gluteal, and thigh muscles occurs. Eventually fixation of the spine and hips may occur with characteristic flexion deformities.

The laboratory findings in spondylarthritis of the rheumatoid type are of greater aid in reaching a diagnosis than in the degenerative lesions. The sedimentation rate is increased in over 90 per cent of patients with active disease. The average rate, during the active stage, is 25-30 mm. (Cutler). It drops to normal when activity subsides. The total leukocytes are increased in as much as 96 per cent of patients with active disease, as shown by an elevated Schilling or nonfilament cell count.[1] These tests are more useful for following the progress of the disease than for differential diagnosis, as results may be similarly abnormal in other diseases associated with articular inflammation.

The significance of widespread inflammatory lesions in muscles of patients with rheumatoid spondylarthritis has been appreciated only recently. This muscular involvement, when studied more extensively, may be of direct value in the diagnosis of this form of inflammatory lesion. At present, observation of this type of inflammatory myositis appears to have contributory value in the establishment of a diagnosis of rheumatoid spondylarthritis.[5]

The therapeutic management of this disease consists of medical and orthopedic measures. It should be remembered, however, that the best results are obtained not by the application of any single measure, but from the continued intelligent application of a program directed against the many abnormalities produced by this condition. Problems which arise in the course of rheumatoid spondylarthritis, such as flexion deformities and excessive loss of ability to use the extremities, require frequent changes in details of a therapeutic program. These complications must be recognized early and counteracted by means of adequate stabilization.

Many drugs have been advocated in the treatment of this form of lesion during the past years and many more will be prescribed in the future. These drugs are always introduced with great enthusiasm, but none have fulfilled expectations. Analgesic drugs may be administered until the acute symptoms have subsided. Acetylsalicylic acid and sodium salicylate are the cheapest and will relieve the joint pains as well as more expensive drugs. Vaccines of all kinds and foreign proteins are entirely useless.[6]

Gold therapy and radiation therapy are perhaps the most important therapeutic agents in general use today. Although there are many who do not recognize the value of gold therapy, there is considerable evidence that gold can, in an ununderstood manner, lessen the progress of inflammatory lesions of this form of spondylarthritis. It should not be administered, however, until a definite diagnosis has been made. Until a few years ago, toxic reactions to gold were the greatest barrier to its wider use. The discovery of 2-3-dimercaptopropanol (BAL) has been of great value in the management of toxic reactions resulting from gold, such as granulopenia, exfoliative dermatitis, nephritis, and thrombopenic purpura. Numerous other preparations have been utilized but most have been discarded. Paravertebral radiation therapy has proved to be of inestimable value in the control of symptoms due to this condition.

In a personal communication J. M. Eaton[4] stated that in those cases which present low-back manifestations with or without herniation of the intervertebral disks, arthrodial internal fixation has been effective in controlling the symptoms of the disease as it applies to the lower lumbar segments of the spine.

In Great Britain, attempts are being made to reproduce the ameliorating effects of jaundice and pregnancy on rheumatoid arthritis. Several hundred patients have been inoculated with the virus from infectious hepatitis. This procedure, as yet, is unready for widespread clinical use but seemingly holds promise. The results obtained by the transfusion of blood from pregnant women, in an attempt to produce an ameliorating effect, are inconclusive and it is doubtful if permanent results can be expected since the ameliorating effect of pregnancy disappears within a few weeks following delivery.[5]

Philip S. Hench of Mayo Clinic observed as long ago as 1929 that when arthritic women became pregnant they showed marked improvement as did arthritic individuals who became jaundiced.[7] The common factor was held to be a change in function of the adrenal gland. For 9 years Hench and Kendall tested the effect of various adrenal hormones until finally Compound E, now known as Cortisone, turned in a dramatic performance. This substance was originally obtained from the cortex of the adrenal gland; it is now being prepared synthetically from a bile acid. Beside Cortisone, the physicians at Mayo Clinic have tried out on a small number of patients another hormone called ACTH (adrenocortico-trophic hormone) which comes from the pituitary gland. The results have been encouraging. Both Cortisone and ACTH have to be used regularly just as insulin in diabetes. Tests are being performed to determine the detrimental effects which may be produced due to continued use.

At the present time, 100 mg. of Cortisone is administered intramuscularly daily until the initial optimal improvement is obtained (generally within 7 to 14 days), at which time the daily dose is reduced to 75, 50, or even 25 mg., in an attempt to find an effective "maintenance dose." It has been noted that some women who undergo treatment develop rounding of facial contour, acne, mild hirsutism, and cessation of menses.[7]

While the value of Cortisone and ACTH in controlling the symptoms of rheumatoid arthritis is regarded as established, much remains to be learned concerning their possible untoward effects.[8] It has been decided, therefore, that the small amount which can be produced during the remaining months of 1949 shall be used only for clinical and experimental research.

In conclusion, we can readily see that the term "arthritis" has been a misnomer for many diseases of bone and joints. This, in part, has been due to a lack of unity, on the part of the healing professions, in classifying these conditions properly in regard to their etiology and pathogenesis. We, therefore, must not use the term "arthritis" to describe a painful joint until all diagnostic measures have been employed to substantiate the presence of a true inflammatory lesion. Radiographic evaluation is by far the greatest single diagnostic measure in differentiating these lesions.

It is true that these lesions seldom cause death. However, they ravage efficiency and health, provoke pain and discomfort, and slowly progress over the years. As a result, there is gradual impairment of

activity which, in many instances, is imperative for economic reasons.

It should, therefore, be the aim of every physician to administer treatment in a systematic fashion in an effort to afford comfort, contribute to the patient's well-being and morale, and reduce local and general irritability.

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Ruptured Lower Lumbar Intervertebral Disks Neurological Aspects*

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The syndrome of herniated lumbar intervertebral disks is no longer new, but despite the abundance of study in the past 14 years concerning this problem, there still remains considerable controversy in regard to not only the indications for surgical treatment but also the type of surgical treatment to be employed. The purpose of this discussion is not to recapitulate the well-known anatomicophysiological factors relative to the disk nor to enumerate the clinical signs and symptoms, since this has been done regularly in both osteopathic and old-school medical literature and should be familiar to everyone with even the most remote interest in the problem. The purpose, rather, is to present the neurosurgical viewpoint concerning some of the more controversial questions still under debate.

The first of these questions has to do with the decision for surgical treatment versus conservative care. The second question, which is most open to controversy, has to do with the type of surgical treatment employed once the decision in favor of operative treatment is rendered. Prior to a consideration of these questions, however, a listing of the more basic facts relative to physiologic and pathologic considerations may be helpful.

1. The function of the nucleus pulposus is to act as a shock absorber and provide for rocking motions of one vertebral body upon the other. This function is possible only when the annulus fibrosus is intact since this structure serves to confine the nucleus pulposus and prevent its escape from the disk.

2. The annulus fibrosus is weakest in its posterior portion and is well supplied with nerve endings. It has been shown experimentally that injury or breakdown in the posterior annulus fibrosus causes pain typical of "lumbago."

3. The breakdown of a few fibers in the annulus fibrosus may eventually be satisfactorily healed with preservation of disk function, but once the structure is grossly stretched or ruptured the function of the disk is lost and no surgical treatment of any type can hope to restore its anatomic or physiologic integrity.

4. When breakdown of the annulus fibrosus has progressed to the point of allowing the nucleus pulposus to protrude or rupture into the spinal canal the result is an extradural space-occupying lesion which produces symptoms of radicular nature.

5. It is only when intervertebral disk pathology has progressed to the point of producing an extradural root-impinging lesion that surgical treatment holds any promise of consistently relieving the symptoms.

With these statements as a basis for a rationalization I will now proceed to answer the question: When is intervertebral disk surgery in order? Although the beginning breakdown of the posterior annulus fibrosus may cause severe low-back pain, there is nothing that disk surgery can offer at this stage to relieve the symptom of low-back pain alone. Furthermore, ligamentous injury and strain in the region of the facets and many other structures in the low back may produce lumbago independent of any damage to the posterior annulus fibrosus or other portions of the intervertebral disk. As long as low-back pain is the only symptom or as long as low-back pain remains unaccompanied by radicular symptoms, the problem cannot be considered neurological but rather should be considered orthopedic and differentiated from a host of other orthopedic conditions capable of producing such pain. However, once the posterior annulus fibrosus fails to continue its function of confining the nucleus pulposus and the latter structure protrudes or ruptures into the spinal canal the problem becomes entirely neurological and seldom requires any orthopedic treatment for its relief.

The symptoms of an extradural root-impinging lesion due to herniated disk are rather specific, and many more or less pathognomonic signs are seen. These symptoms have been described innumerable times, but for purposes of review the more important ones are listed:

1. A straight lumbar spine with a reduction in normal lumbar lordosis with occasional lateral listing away from the side of the lesion

2. Sciatic pain extending throughout the entire distribution of the nerve to the heel or foot

3. Other subjective sensory sensations in the form of paresthesias or numbness described in the leg

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or foot and corresponding to the dermatome topography of the nerve impinged. (The fifth lumbar nerve, which is impinged from a ruptured fourth lumbar disk, will produce paresthesia and hypesthesia over the dorsum of the great toe and a strip extending up the anterolateral aspect of the leg. The first sacral nerve is impinged from a fifth lumbar disk with the dermatome pattern over the lateral aspect of the foot and outer toes and extending up the posterolateral aspect of the leg.)

4. The sciatic pain and at times the other subjective sensations, particularly the paresthesias of dermatome pattern, are invariably increased by any maneuver which stretches the components of the lumbosacral plexus or produces tension of the dural sac such as coughing and straining, jugular compression, Lasègue's or straight leg-raising tests, or percussion at the level of the lesion

5. Motor changes are minimal, but an absent Achilles reflex is present in the majority of fifth lumbar disk herniations and in approximately 25 per cent of fourth lumbar herniations. There are a few conditions capable of producing the rather specific radicular signs mentioned above other than herniated disk. Metastatic malignancy may simulate this syndrome, but usually can be differentiated through accurate x-ray studies. Tumors of the cauda equina can occasionally produce specific radiculitis with isolated dermatome changes, but generally the symptoms are more widespread, particularly from a motor standpoint. The differentiation of caudal tumors is usually easy with spinal fluid and contrast media studies. A syndrome which has recently been introduced into orthopedic circles, known as the facet syndrome, is alleged to be capable of producing radicular signs identical to those seen in herniated disk. This condition is presumed to represent an edema and low grade inflammatory change involving the facets, the articular ligaments, and possibly even the ligamenta flava. The differentiation of this somewhat nebulous condition would of necessity rest upon myelographic findings, and it is possible that such a situation may account for some cases that appear clinically to be due to herniated disk but are accompanied by normal myelograms. It must be kept in mind, however, that particularly in fifth lumbar disks, if the protrusion is lateral, the nerve may be the only structure in the spinal canal involved, in which case the myelogram would be within normal limits since the subarachnoid space has not been encroached upon. This is an uncommon circumstance, but if the clinical picture is typical of herniated disk in every respect it is a more likely explanation than the so-called facet syndrome.

The decision for surgical attack upon the radicular symptoms must depend not only upon the presence of specific radiculitis of typical distribution with accompanying typical objective motor and sensory changes but upon the basis of a failure of the symptoms to respond to adequate conservative treatment. This should include a number of weeks of rest, traction, manipulation, or immobilization, depending upon the patient's response and tolerance. Certainly not all cases, even with a typical clinical picture, require operation for relief although frequent recurrences usually indicate surgery even if a short remission may be accomplished through rest or conservative care. If operation is elected, it is best done during an acute episode rather than during the stage of remission.

To recapitulate briefly I do not feel the concept of the concealed or occult intervertebral disk, as introduced by Dandy[1] and producing possibly only low-back pain, is ever a justification for a surgical attack upon the disk. Surgery upon the disk is never indicated until definite and persistent specific radicular signs are present with accompanying subjective sensory and motor changes as reviewed above. When such signs occur, the problem is strictly neurological and may be classed in the same category as all extradural space-occupying lesions. Since the space-occupying lesion in herniated disk is not neoplastic and may undergo spontaneous remission, the patient should be given the benefit of time and conservative care before a surgical recommendation is made. When surgery is to be considered, every patient should be given the benefit of a Pantopaque myelogram to prove the diagnosis, localize the level, eliminate the possibility of multiple disk herniation, and eliminate caudal tumor.

If surgery has been decided upon, the next controversial question comes up for consideration, namely: What type of surgical procedure should be employed?

Inasmuch as the presenting symptoms justifying a diagnosis of herniated lumbar intervertebral disk all refer to impingement of one or more of the components of the lumbosacral plexus, the treatment obviously should be directed towards removal of the extradural root-impinging mass. Many surgeons and some clinics are recommending low-back stabilizing operations in conjunction with the removal of the extradural mass. This is particularly true of orthopedic surgeons, but it is the consensus of most neurosurgeons that low-back stabilizing operations are not only unnecessary but undesirable in most cases. Surgical removal of a herniated disk that has invaded the spinal canal may be one of the most difficult of all surgical operations but if properly performed it can be accomplished without laminectomy and without the sacrifice of any support in the lower back. It must be remembered that the symptoms of herniated disk are almost entirely radicular and not due to instability in low-back support. It is seldom that a syndrome associated with ligamentous strain and relaxation subsequent to either trauma or congenital anomaly will simulate the disk syndrome if the above criteria are insisted upon before a diagnosis of a surgically treatable condition resulting from herniated disk is admitted.

I feel it is to the patient's best interest, if a herniated disk has been diagnosed clinically and verified myelographically, to be treated for the herniated disk only and results observed prior to any consideration of a stabilizing operation which involves a considerable period of hospitalization and subsequent incapacitation. Disk surgery would in no way interfere with a subsequent orthopedic procedure to stabilize the lower back if symptoms suggesting low-back instability should persist after relief of the radicular signs due to the protruded or herniated nucleus pulposus. In Spurling's[2] experience spinal fusion at the time of disk surgery is never considered regardless of the circumstances, and, according to Spurling's reports, subsequent stabilizing operations are seldom necessary even though associated congenital anomalies or other factors suggesting low-back instability are present in connection with the herniated disk syndrome.

It is possible that some surgeons are prone to diagnose herniated disk in conditions that are actually due to orthopedic conditions, and in such instances fusion may be of benefit. There is little question, however, that, if the mechanics of herniated nucleus

pulposus are properly understood and the syndrome considered in the same way as any other extradural space-occupying lesion, there should be no occasion for any surgical procedure other than the relief of the mass producing the pressure upon the nerve and the curettage of the disk space to avoid subsequent herniation and a return of symptoms.

RESULTS

In the past few years a number of reports have appeared in the literature which have been discouraging concerning results of the surgical treatment of herniated lumbar intervertebral disks. This is understandable when one considers the rather wide variety of surgeons who have been undertaking this procedure and particularly the enthusiasm that has been shown in the past few years by general surgeons and industrial surgeons. As Spurling[3] states, the operation may be the most difficult of all surgical procedures and certainly should not be done by anyone with an inadequate background in the technic of intraspinal operations. The results obtained by most neurosurgeons and particularly by those who have contributed to the discovery and pioneering of the disk problem, indicates a satisfactory result in approximately 80 per cent of cases. Failure to equal these results in other reports is probably due to a number of factors including incorrect conceptions of the nature of the herniated disk syndrome, with the result that many patients are operated who do not have true radicular involvements and would do much better with no operation at all or possibly with some orthopedic procedure.

An appraisal of industrial cases has little value statistically since it is well known that many patients receiving compensation for industrial accidents are reluctant to return to their usual duties particularly if such duties are arduous. Consequently if the criterion of the patient's ability or inability to return to his usual work is used as a basis for statistics, results would be classed as poor, when actually psychological factors may be playing a more important part than physical factors.

SUMMARY

1. Although the syndrome of the herniated lumbar intervertebral disk has been discussed regularly for nearly 15 years, the problem is still controversial in many respects.

2. Existing controversies have to do chiefly with the problem of surgical versus conservative care and the type of surgical treatment to be employed.

3. If the function of the intervertebral disk has been destroyed through a breakdown of the annulus fibrosus and herniation of the nucleus pulposus, no surgical measure can ever restore this lost function.

4. Disk surgery is indicated only when the clinical signs indicate invasion of the spinal canal by the disk material with impingement of one or more components of the lumbosacral plexus.

5. The classical signs of this type of radicular involvement have been outlined. If verification of these signs was insisted upon before operation was undertaken, the percentage of negative explorations could be reduced to nearly zero.

6. Even though the clinical and laboratory signs of an extradural root-impinging lesion from a herniated disk are present, the patient should still be given the benefit of considerable conservative treatment prior to surgery since spontaneous remissions of lasting nature are not uncommon.

7. Myelography should be employed in every case not only to localize the level of herniation but also to assist in the differentiation of such conditions as tumor of the cauda equina and the so-called facet syndrome.

8. Complete x-ray studies should also be available to eliminate metastatic malignancy and arthritis of the Marie-Strümpell type.

9. If disk surgery is decided upon, the procedure should involve only the removal of the extradural root-impinging lesion and should not include concomitant low-back stabilizing operations. Most cases presenting a disk syndrome sufficiently typical to justify disk surgery will obtain satisfactory relief of symptoms with removal of the mass alone. If a stabilizing operative procedure is necessary, it should be undertaken as a separate operation after it has been shown that the symptoms indicating low-back instability persist following nucleus pulposus removal.

10. If the above criteria and operative methods are adhered to and properly performed, good results should be obtained in at least 80 per cent of cases. Poor results are probably due to faulty understanding of diagnostic criteria and to operations performed by physicians with inadequate neurosurgical experience in the technic of intraspinal surgery.

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THE SCIENTIFIC APPROACH TO ORTHOPAEDIC SURGERY

We know that many of the methods we employ depend on impressions of our results, sometimes indeed on our temperaments, and on changing fashions, rather than on clear and logical thought. Statistical analysis of our cases, and of our methods, is not always adequate; and sometimes, unwittingly on our part, we draw inferences which are quite incorrect and misleading. I fear that many of them would not bear the scrutiny of a trained statistician. We have all had the experience of visiting a hospital and being shown satisfactory results from one method of treatment, while at another hospital methods which were apparently quite different were claimed to be equally good. There are many instances: for example, the treatment of fractures of the spine with or without plaster fixation; the treatment of sciatica by rest or by operation; the functional as opposed to the anatomical treatment of fractures: and there are other, and perhaps better, examples. There must be some explanation for this diversity. It may be that we are unable to assess clearly what we have done. It may be that on occasion we have over-persuaded patients who will not let us down. It may be that we aim at producing the satisfied patient—an aim not to be belittled, but not the scientific test of success; or it may be that in diverse treatments there are common factors which themselves, though unrecognized, are the real causes of success. Such possibilities have this in common—they show a lack of the scientific outlook. . . . S. Alan S. Malkin, *The Journal of Bone and Joint Surgery*, February 1949.

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The Ruptured Intervertebral Disk Syndrome From the Orthopedic Surgeon's Standpoint*

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In 1854 Virchow[1] reported a case of ruptured intervertebral disk due to a fall. It was not until 1934,[2] however, that an intensive effort was made to determine the exact status of the intervertebral disk in the etiology of low-back and referred nerve-root pain. Since the original work of Barr, Mixter,[3] and others, many thousands of these cases have been operated upon until today the syndrome of the ruptured intervertebral disk is a well-established clinical entity.

This subject is of particular importance to the osteopathic profession because osteopathic physicians probably see more cases of ruptured disks than do any other similar group of doctors in this country today. Even though literally hundreds of articles have appeared in the literature describing in minute detail the symptom complex produced by ruptured disk, many cases are still going unrecognized. Physicians are treating them as peripheral neuritis instead of getting at the source of the condition which is actually disk pathology.

The disks occupy the intervertebral spaces from the second cervical to the lumbosacral junction, and disk damage or disk wear and tear is most prevalent at points of high joint mobility, notably in the lower cervical region and in the lower lumbar region. The disk is composed of annular fibers and a nucleus, and the upper and lower cartilaginous plates of the bodies of the vertebrae are considered also to be a part of the disk. Since the nucleus pulposus is the trouble maker in the cases that come to surgery, it should be remembered again that the nucleus is confined within the interspace by the two cartilaginous plates and the annulus fibrosus. It is also well to remember that the anterior longitudinal ligament as well as the posterior longitudinal ligament acts to keep the nucleus within its confines and to prevent undue wear and tear on the annular fibers. In the adjacent supporting ligaments, the ligamenta flava, which act to maintain facet apposition and therefore also maintain the nucleus in a proper relationship between the bodies of the vertebrae, cannot be overlooked.

In considering the etiology of the so-called disk rupture or the extrusion of the nucleus pulposus posteriorly, this paper discussed only those ruptures of the intervertebral disk which occur in the lower lumbar area of the spine. The fact is recognized that congenital defects undoubtedly occur in the annulus which predisposes the individual to an ultimate rupture of the nucleus, and of course also the fact that occupational strains and stresses in the lower lumbar spine are probably the great exciting cause of actual ruptures of the nucleus pulposus. It is not uncommon in the histories of these patients to find that they can remember no obvious accident or injury predisposing to ultimate rupture. Disk damage can come about in childhood from any one of the numerous falls which children encounter. These falls undoubtedly produce articular lesions in the joints involved, which lead ultimately to hypertrophy of the ligamenta flava in their function of maintaining facet apposition.

Postural pelvic imbalances will lead to disk injury over a period of years with perhaps an eventual actual breakdown and rupture of the nucleus. Many of these patients who come to the orthopedic surgeon with no actual remembrance of an acute severe injury have probably had either numerous minor injuries to lower lumbar disks over a long period of years as a result of postural changes, or disk injuries in early childhood which they have forgotten. I am inclined therefore to classify articular lesions, especially at the lumbosacral level, as perhaps the one most important predisposing cause of changes of a neurocirculatory nature which lead ultimately to disk rupture. The individual who has maintained an articular lesion in the lower lumbar segments of his spine over a long period and who has added occupational stress during adult years is the one who is predisposed to disk damage with eventual rupture. Rupture may not occur until after 20 or 25 years of adult life, but it may also develop during the teenage period, if occupational forces applied to the lower back are more than the individual is constitutionally fitted for. I have operated on a 16-year-old boy and removed ruptured disks, and also on a 67-year-old man. In the first instance the patient had three ruptured disks, brought on by an acute injury, which were removed at surgery. The boy had performed exceedingly heavy work from the age of 10 with a body not functionally adequate for arduous occupation. In the second case, that of the 67-year-old man, the individual had compensated well for over 30 years before the last two lumbar disks eventually broke down and produced nerve-root pressure.

The syndrome of low-back pain, tenderness to pressure over the fourth and fifth lumbar spines, and an intermittent type of sciatic pain with associated lower lumbar muscle spasm is the usual symptom complex produced by a ruptured disk. Usually, by the time the orthopedic surgeon sees these patients sciatic pain has been constant for quite some time. It is not unusual to observe in the history, however, that the patients have in the past suffered the same or similar symptoms which were relieved for a time, only to reappear at a later date. I feel that any case where there is typical sciatic distribution of pain which appears to originate in the lower back with marked tenderness over the last one or two lumbar spinous processes should be seriously considered on first inspection as a possible disk lesion.

There are other causes for sciatic pain, and in making an examination these other conditions should certainly not be overlooked. All patients with sciatic pain should have the benefit of competent x-ray studies of the lumbar spine and pelvis and, if other pathology is suspected in the spine, a complete spinal study should be done. The usual films which should be ordered, however, are anteroposterior and lateral studies of the lumbar spine and pelvis and oblique studies of the lumbar spine. These films will either demonstrate or eliminate actual arthritic changes in the arthrodials, bone disease of an inflammatory or neoplastic nature, and spondylitic changes, and will also give an idea as to the relative width of the interverte-

*Presented at the Surgical Teaching Sessions, Fifty-Second Annual Convention of the American Osteopathic Association, Boston, July 19, 1948.

bral spaces and the relationship of one spinous process to another.

One of the common findings is a flattening of the lumbar spine or an obliteration of the normal lordotic curve. Congenital defects are also watched for, especially those of a spondylolisthetic or prespondylolisthetic nature. Narrowing of the intervertebral space in the presence of the symptom complex may be significant although it is not unusual to see a narrow lumbosacral spacing in a patient who has no symptoms related to this pathology.

Following the x-ray examination of these patients, a complete physical examination is always advisable. Particular attention should be paid to joint mobility of the lower lumbar spine. These patients should be tested in their ability to flex, extend, and sidebend. The extent to which these motions of the lower lumbar spine aggravate or accentuate sciatic pain should be determined. Tenderness to pressure over the lower lumbar spine, with an exact determination of the spinal process which is the most tender, will aid in determining, to a certain extent, the site of disk rupture. The male prostate should be examined for pathology. Likewise, a pelvic examination should be made on all female patients to rule out pelvic pathology as a factor exciting a sciatic type of pain. If the physical and orthopedic examinations are negative to this point it is fairly safe to assume that the case is one of ruptured disk.

The patellar and the Achilles tendon reflexes should always be examined, and also it is well to examine the deep tendon reflexes of the upper extremities for comparison. It is advisable to examine the abdominal reflexes and to determine if any degree of atrophic change has taken place in the musculature of the extremity involved. Paresthetic and hypesthetic changes should be noted. It is not the province of this paper, however, to go into the neurological details of such an examination but only to mention these diagnostic reflex tests, as this field will be covered in another paper.† While the jugular compression test, in my experience, has been positive in only about 15 to 20 per cent of cases, I feel that it is well to perform it in all examinations of this type. In the presence of acute or severe sciatic pian the Lasègue test will invariably be positive and will not add particularly to knowledge of the case up to this point of the examination. However, as a matter of record it should be performed.

Following the completion of routine examination in a patient suspected of having a ruptured disk, if the impression is that the pathology seems to lie in one of the lower lumbar disks and the pain is a transmitted pain of nerve-root origin, then it has been the practice of the writer to advise confirmatory myelography. When I first started doing myelograms, I used an opaque oil which was later discarded and for a time nothing was used but air. For the last several years, however, I have again used Lipiodol in performing myelograms and have found it eminently satisfactory as a confirmatory diagnostic agent.

A myelogram is not the "terrible ordeal" that Dandy[3] once said it was. In experienced hands the process is simple; there is no pain to the patient; and the procedure is relatively rapid. Under proper premedication the patient is brought to the x-ray room where he is placed on the x-ray table with a pillow under the abdomen, and under local anesthesia a spinal needle is inserted in the third lumbar interspace. Approximately 8 cc. of spinal fluid are withdrawn for laboratory study and 5 cc. of heavy Lipiodol then injected for radiographic purposes. After fluoroscopic visualization of the transmission of the oil from the level of the twelfth thoracic vertebra to the cul-de-sac, films are taken at the last three levels of the spine, postero-anterior and both oblique views. The oil then is pooled for aspiration. The usual time of aspiration is 5 to 15 minutes. Aspiration is between 99 and 100 per cent complete. This record, however, has been achieved after long experience, and it is not advisable for a novice to attempt the procedure without sufficient experience to assure complete aspiration or extraction of the oil from the subarachnoid space. Lipiodol is irritating if left in the spinal canal and as a consequence it should not be used by a beginner in this work.

It is well to remember, however, that myelography is not a primary diagnostic procedure but merely one to confirm and localize a previously diagnosed rupture of the nucleus. If there is no reason clinically to think that a space-occupying lesion is present in the spinal canal, I do not advise myelography as a routine test. Contrast myelography, using Lipiodol as the opaque agent, has served to confirm clinical impressions in over 90 per cent of those cases which have been proved at surgery. This percentage is based on the abstract interpretation of the films by the radiologist and only includes those lesions which are not questionable on the films. In my own experience, x-ray interpretations have been positive in over 98 per cent of cases.

After the clinical and radiographic diagnosis of a ruptured disk, the method of treatment which should be applied must be determined. Various articles have appeared in osteopathic publications by men who describe the manipulative treatment of the ruptured disk, explaining how the nucleus can be returned to the interspace and, literally hundreds of articles have appeared in old-school medical literature, generally in regard to the surgical approach to this very important problem. I think perhaps I have used all of the various methods which have been described and utilized in attempting to relieve these patients of pain and disability. If I were to choose one treatment above all others for use in the average case of disk rupture it would be surgery. I do feel, however, that most of these patients, excluding those with extremely severe nerve-root pain who require narcotics constantly for relief, should have the benefit of conservative treatment at least over a reasonable period prior to resorting to surgery.

It has been my habit on seeing patients in consultation, if the symptoms are such that they can afford to take time for the reasonable trial of conservative management, to refer them back to their physician for osteopathic care for at least 4 to 6 weeks. Patients have responded exceedingly well to osteopathic conservative management and have become symptom free in a reasonable period of time, although there are some patients who have been made worse by manipulative therapy and all other forms of conservative management. I believe that only those cases in which the nucleus has not extruded through the posterior ligament into the spinal canal have a chance of becoming asymptomatic under conservative management. If only one had the ability to look into the spinal canal and observe the position of the nucleus prior to surgery, one would have an index which would immediately classify these patients into two groups: those who have

†See "Ruptured Lower Lumbar Intervertebral Disks—Neurological Aspects" by Randall J. Chapman, pages 224-226 of this issue of THE JOURNAL.

some chance of getting relief under conservative management and those who have not.

When large pieces of nucleus extrude through the annulus and also through the posterior longitudinal ligament, lying free in the spinal canal, many times adherent to the nerve root, it is a hopeless task to attempt relief by conservative means. In many of these cases, however, the annulus has ruptured and allowed the nucleus to extrude posteriorly against the longitudinal ligament producing a very definite retropulsion and changing the position of the nerve root but still without an actual extrusion of the nucleus into the spinal canal. Some of the latter cases are the ones which become symptom free for a time, either without treatment or under conservative treatment. With a definite rupture of the annulus, however, and with the nucleus extruded posteriorly against the posterior longitudinal ligament, it is only a question of time before the ligament will erode, allowing the nucleus to assume the characteristics of an extradural tumor within the spinal canal.

My operative approach to a case of ruptured lumbosacral disk manifesting symptoms of a nerve-root pressure on one side is probably not greatly different from that of most surgeons doing this work. Technics of surgery, however, have changed greatly from the original work done on disk lesions from the time of the transdural approach of complete laminectomy to the interlaminar approach of Love.[4] Many surgeons today still do hemilaminectomies on these cases, but I find it necessary to remove completely one half of the laminal arch only in cases in which there are anomalous changes of a bony nature which prevent proper instrumentation.

After the ligamenta flava are completely removed, a small button of bone is removed from the inferior margin of the lamina of the fifth lumbar vertebra and a small button of bone is also removed from the superior margin of the first sacral vertebra, merely enlarging the interlaminar space for better visualization. The nerve root, of course, is first investigated. If the nucleus has already extruded into the spinal canal, the extruded portion is grasped and removed in one piece if possible. All remaining pieces of nucleus are picked up and removed, and the rent in the ligament looked for. If this is observed, it is usually necessary to enlarge it somewhat to enter the interspace from which the rest of the nucleus is removed. The interspace is then curetted, and usually additional small pieces of nucleus are removed with the debris. The inferior cartilaginous plate of the fifth lumbar vertebra and the superior cartilaginous plate of the first sacral vertebra are removed. After the interspace is as clean as it is possible surgically to get it, the wound is irrigated with normal saline solution and a thorough inspection made for any evidence of any other pieces of nucleus which may have extruded beneath the ligament. If any are found, they are, of course, removed. The wound is then closed in the usual manner with nonmetallic sutures.

Postoperative care of these patients requires that they lie flat on their backs for 24 hours following surgery. Thereafter they are encouraged to turn from side to side for a period of approximately 3 or 4 days, after which they are usually allowed to sit up on the edge of the bed. Their feet are on the floor by about the fifth day. They usually do some walking around the room and even out in the hall by the seventh day. The average patient will be discharged on his eighth postoperative day, ambulant, but with a back support. An ordinary lumbosacral corset with aluminum stays placed wide from the spinous processes is good. This support is usually worn for about the first 3 months in the postsurgical state, after which patients are encouraged to get away gradually from the use of any except their natural muscular and ligamentous support.

The indications for arthrodesis following disk resection of course vary. They are learned by individual experience and by observation of the experience of others with cases similar in pathology. Hypermobility of the lumbosacral joint, frank facet arthritis, and spondylolisthesis are the usual indications for arthrodesis following the resection of a disk. I have made it a practice, of course, to fuse all cases of spondylolisthetic nature where a disk has also been involved and have had satisfactory results following this type of procedure. I am not convinced that it is necessary to perform surgical fusion after a simple disk resection, although I may arrive at that conclusion sometime later after further experience with this particular phase of orthopedic surgery. After thorough removal of the nucleus with curettement of the cartilaginous plates, the average joint will tighten up in the months following surgery and will require no additional stabilizing measures. I have seen this happen in rather markedly hypermobile fifth lumbar vertebrae. Six months following surgery I have seen well-stabilized lower lumbar spines, especially at the lumbosacral articulation. If my experience continues thus, I will certainly not subject such a patient to longer hospitalization, a change in economic status because of a longer convalescence, and greater surgical risk at the time of the operation. If I should cease to get these good results from the type of surgery I am now doing, I will undoubtedly and probably routinely perform a fusion following resection of the disk.

There are methods of facet fusion today which do not add particularly to the length of the patient's convalescent state following surgery nor to surgical shock at the time of the operation, especially the method described by King[5] of arthrodesis by the use of screws through the facets. Most men, however, using this type of arthrodesis also supplement and use bone chips, either iliac or tibial, or a tibial cortical graft, which in itself adds further disability in the period of convalescence. This is a controversial subject. Each surgeon must necessarily decide on the basis of his own experience. Mine is that the great majority of these patients do exceedingly well with the removal of the disk only, and those few who do not, can have fusion performed at a later date. Difficulties are encountered when fusion is performed at a later operation, but my good results from the procedure without arthrodesis have outweighed them.

It seems generally agreed that Nature fills in the vertebral space with a fibrous type of tissue which tends to produce stability of the bodies of the vertebrae, which is, after all, the ideal type of fusion if it can be accomplished. A procedure of this type cannot be standardized. There are those individual cases that undoubtedly should have fusion at the time of surgery. Certainly in the presence of spondylolisthesis, with or without ruptured disk, fusion should be carried out. I would be inclined to feel also that in many cases of frank facet arthritis, fusion should be performed at the time of original surgery. In my opinion, in most patients facet arthritis is really a manifestation of a general degeneration and is secondary to the presence

of an unstable disk over a period of years, which eventually culminates in rupture. The individual surgeon's own experience with the end results of these cases will be the determining factor between routine fusion or disk resection only.

Anyone doing disk surgery should remove as little bone as possible and still accomplish the objective in as thorough a manner as possible. I have seen neurosurgeons sacrifice lamina and also the facet, with the object in mind, of course, of relieving nerve-root pain but without due regard for the stability of the patient's back. Extensive surgery applied without fusion results in instability. The original object of relieving nerve-root pain is undoubtedly accomplished, but the stability of the patient's back has received no consideration. If this approach is used, I would heartily recommend that an orthopedic surgeon supplement the neurosurgeon's work and produce stability by extra-articular arthrodesis. It is only rarely necessary to do a hemilaminectomy in these cases. I feel that it is not good surgery, since muscle will adhere to the dura and act as a source of reflex irritability and pain. The less bone removed the better.

It has been my practice at follow-up examinations to take a standing pelvic x-ray or postural determination and to apply lifts, if needed, at a date from 1 to 2 months following surgery. The estimate of pelvic balance will be more nearly correct after the surgery than before. As a consequence, I have not made the standing film a routine presurgical order. I have made it a practice to check all of these patients 30 days after surgery, at which time I determine when they may return to their usual occupations. During this period of postsurgical convalescence I usually advise the patients that the best form of exercise is walking. Occasionally patients develop some degree of muscle spasm in the lumbar region. They are treated with diathermy or some type of heat and gentle manipulative measures. However, most patients do exceedingly well and usually return to average, active occupation in approximately 6 weeks. I have had them return to work in 3 weeks, and I have had them delay 3 months, depending on the type of occupation which the individual is accustomed to pursue.

Usually pain is entirely gone before they have left the hospital. In perhaps the majority referred nerve-root pain over the source of the sciatic nerve is gone immediately after surgery.

SUMMARY

Briefly the high points of this discussion of the intervertebral disk syndrome and the treatment are: First, a history of low-back pain or so-called lumbago attacks recurring over a period of years with an eventual flare-up of low-back pain and associated unilateral sciatic involvement, should make one suspicious of the ruptured disk as a possibility in the differential diagnosis. Second, myelography should be used as a confirmatory procedure in localizing the lesion and verifying the clinical diagnosis. Third, practically all patients should have the benefit of a trial period of conservative management prior to the application of surgery for the ruptured disk. Fourth, to fuse or not to fuse is a debatable question and should be left to the orthopedic surgeon who does the work. Fifth, as little bone as possible should be sacrificed during surgery and if the facets are removed, extra-articular arthrodesis should always be performed.

It is hoped that this paper will serve to promote added investigation on the intervertebral disk syndrome and the knowledge pertaining to degenerative disease of the disks generally.

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Book Notices

FRACTURES. By Paul B. Magnuson, M.D., F.A.C.S., Professor of Bone and Joint Surgery and Chairman of the Department, Northwestern University Medical School; Attending Surgeon, Passavant Memorial Hospital and Wesley Memorial Hospital, Chicago, and James K. Stack, A.B., M.D., F.A.C.S., Assistant Professor of Bone and Joint Surgery, Northwestern University Medical School; Attending Surgeon, Passavant Memorial Hospital and Cook County Hospital, Chicago. Ed. 5. Cloth. Pp. 538, with illustrations. Price $7.00. J. B. Lippincott Company, 227 South Sixth Street, Philadelphia, 1949.

Fundamentals of anatomy, pathology, and physiology of bone and muscle—being fundamentals—do not change from year to year. The fifth edition of "Fractures" contains no essential revision in these aspects. The purpose of the book remains the presentation of the principles so that any doctor with a mechanical mind can devise the means to reduce fracture and apply whatever retention equipment is most suitable because of his basic understanding of the fundamentals.

With this in mind, the current revision includes also a new chapter called "'Farmyard' Treatment of Fractures." "Civilization has brought about many changes, but the anatomy of the human body remains the same. At the surgeon's command are x-ray equipment and mechanical appliances that the ancients did not have. There are also many types of fractures, attributable to the accelerated speed of industry, of transportation and of war, which they seldom, if ever encountered. If the present-day knowledge of anatomy and physiology is applied and if treatment is based on this knowledge plus the use of x-rays and operative and mechanical aids, there should not be as many poor results in the treatment of fractures as are seen today." The authors' "farmyard" treatment explains certain simple methods which may be applied under almost all circumstances, meeting the urgent requirement of prompt reduction before induration occurs, or diffusion of blood and distention of fascia.

Although the approach is fundamentally conservative and the authors feel that contemporary treatment of fractures tends to be too gadgety at the expense of the patient, the new concepts of treatment on compound fractures and wounds, the use of antibiotics, the potentialities of the use of closing wounds and grafting full-thickness skin to cover defects, and the advantages of early ambulation are explained.

The chapters originally contributed by Loyal Davis on neurological aspects of fractures of the spine and the skull and by John S. Coulter on indications and technic for physical therapy retain their virtues with the revision and inclusion of newer knowledge.

Magnuson and Stack are to be commended for their commentary concerning medicolegal aspects of various fractures and their sound advice in regard to expressions used in front of the patient whenever his condition is mentioned. The value of these precautions can hardly be overestimated, and they are presented here as a part of the comprehensive treatment of the fracture.

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CHILD HEALTH SERVICES AND PEDIATRIC EDUCATION. Report of the Committee for the Study of Child Health Services, The American Academy of Pediatrics, with the cooperation of the United States Public Health Service and the United States Children's Bureau. Cloth. Pp. 270, with illustrations. Price $3.50. The Commonwealth Fund, 41 E. 57th St., New York, 1949.

Purporting to "bring to the attention of the medical profession and to all those interested in the health of our children the deficiencies in our existing services for children in order that these deficiencies may be corrected," the American Academy of Pediatrics presents this volume as an inventory of the kind and availability of medical care and health service for children.

In reference to the statistical emphasis on "availability," the moot and inevitable poser appeared: How to obtain better distribution, by government-supported medicine or private practice? A practical working cooperation was achieved on the part of the body of private physicians who organized and developed the project and the two government agencies best equipped to assist, namely, the United States Children's Bureau and the United States Public Health Service. The results of this cooperation achieved more than either could have accomplished separately.

In no single branch of the healing arts is the preventive approach so important as in pediatrics. Supervision during growth now constitutes more of the practice of the pediatrician than care of the sick. The pediatrician participates actively in community services such as well-baby clinics, school health programs, mental hygiene clinics, et cetera. It is his concern that many children do not receive adequate preventive and curative care, whatever the reason.

The quest for causes led through studies of child health services and their total volume, private practice, pediatric hospital facilities, community health services, health supervision for the preschool child, the relation between health services and per capita income, pediatric education including the number and location of medical schools, student enrollment and admission requirements, departmental organization, budgets, staff of pediatric departments, hours in pediatrics with reference to student time, the teaching methods, the clinical clerkship, and elective courses; newborn and premature infants, handicapped, convalescent, and well children, clinical facilities, the comparisons between high ranking and low ranking pediatrics departments, the staff in hospitals approved for pediatric residency, general inpatient training and its special aspects, outpatient training, ward rounds and conferences, and other phases of pediatric education.

John P. Hubbard, director of the Committee for the Study of Child Health Services of the Academy, promises additional and more detailed reports of the tabulations of data and listings of personnel, services and facilities, county by county to be published for each state. A supplementary volume, too, is in press with the statistics from which the summaries presented in this book were compiled.

Statistics are not lacking here, however, and Presentations, Inc., has assembled the charts, sorting the welter of figures into meaningful, easily read graphs.

If the merit of the book is any measure, the avowed aim of promoting interest and action in converting "what is" to "what ought to be" should be considered a mission accomplished. In addition to the general interpretations and summaries presented, the reader finds much to put to his own personal practical use.

I ACCUSE THE DOCTORS. By Sidney Torler. Pp. 149. Price 2/6. Alvin Redman Ltd., 4, Fitzroy St., Fitzroy Square, London W. 1.

This booklet, to quote the author, is "a candid commentary on hostility shown by the Leaders of the Medical Profession towards the healing art of Osteopathy; and how the public suffers in consequence." The numerous episodes recited of patients, handicapped and suffering, being cured by osteopathic manipulative therapy after months or years of care at the hands of the leaders of the medical world without benefit, are convincingly told. They contribute the stories of a few score more of the thousands upon thousands of patients who would never have recovered health except for the treatment given by osteopathic physicians. The narratives telling of disdain heaped on some medical men who gave their support to osteopathic physicians may not be so well known.

The accusations made against the members of the medical profession that they are callously unconcerned with the welfare of their patient when it comes to choosing between the patient and recognizing osteopathy; that their prejudice is so intense that it blinds them to the evidence witnessed by their own eyes; that they parade a pretense of scientific infallibility so obvious as to appear stupid to an intelligent layman—all seem well supported. How these things can be true of men consecrated to the service of healing, men of honor in most relations of life is not adequately explained by the author's comments.

To those who do not already know the story and need to know that manipulative osteopathy has a service to render that still needs recognition, the book may serve a helpful purpose. It will probably deepen the antagonism of medical men toward osteopathy rather than help close the rift between osteopathy and allopathic medicine and thus fail to accomplish any large constructive purpose.

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OPERATIVE TECHNIC IN GENERAL SURGERY. Edited by Warren H. Cole, M.D., F.A.C.S., Professor and Head of the Department of Surgery, University of Illinois College of Medicine; Director of Surgical Service, Illinois Research and Educational Hospitals, Chicago. Cloth. Pp. 952, with illustrations. Price $16.00. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1949.

OPERATIVE TECHNIC IN SPECIALTY SURGERY. Edited by Warren H. Cole, M.D., F.A.C.S., Professor and Head of the Department of Surgery, University of Illinois College of Medicine; Director of Surgical Service, Illinois Research and Educational Hospitals, Chicago. Cloth. Pp. 730, with illustrations. Price $14.00. Appleton-Century-Crofts, Inc., 35 West 32nd Street, New York, 1949.

These volumes are the product of the joint efforts of a distinguished group of surgeons actively engaged in the performance of the operative procedures which they describe. Altogether, fifty-four American surgeons contributed to these volumes. All operative fields in general surgery are covered with the exception of obstetrics, eye, ear, nose, and throat. These handsomely bound and printed volumes contain more than 1600 pages with over 1600 illustrations.

The field of surgery today is so wide and surgery itself is so complex that no one is capable of great technical expertness, really based upon a large experience, except in a relatively limited number and types of operative procedures. The proper selection and the proper technical performance of the surgical operation are the final deciding factors in the attempt to cure any surgical lesion by an operation. This book has the great advantage of having the various procedures presented by men who have had extensive experience with the particular subject about which they write.

"One of the great contributions made during the past several years to the art of surgery," the editor states, "is the knowledge that refinement in technic of methods already existent may make sufficient difference in results to justify operations which otherwise might not be indicated except in unusual circumstances. The introduction of sulfonamides, penicillin and other antiobiotic agents has been of great aid in improving results, but in reality, has had much less influence than assumed by most people, including physicians. These agents must not be allowed to displace sound surgical principles.

"As important as operative technic is in surgical results, it is a well-known fact that fundamental principles such as those involved in hemorrhage and shock, burns, treatment of open wounds, etc., are of vital importance and must be utilized. Because of the necessity of thorough knowledge of fundamental principles in surgical results these subjects are included in the text. Furthermore, such phases as anatomy, physiology, indications, precautions, etc., have been presented in at least slight detail lest the young surgeon gain the idea that perfection in technic is so important as to displace other phases of surgical knowledge."

ESSENTIALS OF ORTHOPAEDICS. By Philip Wiles, M.S. (Lond.), F.R.C.S. (Eng.), F.A.C.S., Hon. Orthopaedic Surgeon, Middlesex Hospital and King Edward Memorial Hospital; Consulting Orthopaedic Surgeon, Royal Surrey County Hospital; Formerly: Brigadier, A.M.S.; Consulting Surgeon (Orthopaedics), Middle East Force, and Persia and Irak Force; and Consulting Surgeon, Eastern Command, India, and 12th Army, S.E.A.C. Cloth. Pp. 486, with illustrations. Price $10.00. The Blakiston Company, 1012 Walnut St., Philadelphia, 1949.

This text, covering all diseases and injuries of the bones and joints and of the muscles and nerves controlling them, is written primarily for the undergraduate student and the postgraduate who is beginning his surgical training. It is well organized and adapted for this purpose, and the illustrations are excellent.

Physiology and pathology are explained as simply as possible and application made to diagnosis and treatment. A regional arrangement is used in order to assist with diagnosis. Treatment is described in detail when it can be carried out by a general practitioner; in other cases the available methods of treatment and the probable functional results are discussed, operative procedures being described only in general terms. Special attention is given to posture, postural defects, and treatment.

Orthopedics differs from other branches of surgery, the author believes, in that it deals chiefly with injuries and diseases that are potentially crippling. The major role in treatment has often to be played by the patient who alone can prevent his joints from becoming stiff and his muscles from wasting; and, therefore, it is important to have the wholehearted cooperation of the patient.

THE PHYSICIAN'S BUSINESS. Practical and Economic Aspects of Medicine. By George D. Wolf, M.D., Assistant Clinical Professor Otolaryngology, New York Medical College; Fellow, New York Academy of Medicine; Fellow, American Medical Association. Ed. 3. Cloth. Pp. 564, with illustrations. Price $10.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1949.

The physician, in his anxiety to fulfill his medical responsibilities, frequently overlooks the significance of the practical phases of his professional life. This book, which originally appeared in 1938, is designed as a reference manual for the practical and economic problems which every physician encounters in his daily routine and especially in the beginning of medical practice. It should prove of value for this purpose and fills a definite need in the literature of medical practice.

The career of medicine and the business aspects of medical practice are covered from residency to retirement, including specialization, private or group practice, location, and equipment. Two new chapters have been added on investment guideposts and retirement planning, and another new chapter considers the legal aspects of medical practice. The chapter on Fees is prefaced by the following anecdote, which may be useful upon occasion:

"How can I ever show my appreciation?" gushed a woman to Clarence Darrow after he had solved her legal troubles. "My dear woman," replied Darrow, "ever since the Phoenicians invented money, there has been only one answer to that question."

ATLAS OF OBSTETRIC TECHNIC. By Paul Titus, M.D., Obstetrician-Gynecologist to the St. Margaret Memorial Hospital, Pittsburgh; Secretary, American Board of Obstetrics and Gynecology. Ed. 2. Cloth. Pp. 198, with illustrations. Price $7.50. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

This is essentially a book on clinical practice and undertakes to present in pictorial form, with short titles, the subject of modern obstetric technic now accepted as standard for normal and operative deliveries, as well as for various complications of pregnancy and the puerperium. It also includes a section on the technic of sterility studies. In this edition a brief new section on Pregnancy and Antepartum Care and another on Analgesia and Anesthesia have been added, and the sections on pelvimetry and on forceps have been given considerable revision.

Detailed steps in obstetric procedure are shown by means of the magnificent illustrations by Miss E. M. Shackelford. These illustrations are accurate and informative, as they were prepared from sketches made in hospital delivery and operating room. Each step is clearly shown, and the person looking at them should have a perfect visual image of every obstetric procedure.

This atlas can be used as a supplement to one of the standard textbooks on obstetrics which, because of lack of space, omit many pictures of intermediate stages in various types of deliveries or operations which are shown here. However, it also has its own separate function in serving as guidance for anyone desiring to modernize his general obstetric technic, or needing quickly to refresh his knowledge when faced with a complicated case requiring operative interference.

JORDAN-BURROWS TEXTBOOK OF BACTERIOLOGY. By William Burrows, Ph.D., Professor of Bacteriology, Department of Bacteriology and Parasitology, the University of Chicago. Ed. 15. Cloth. Pp. 982, with illustrations. Price $9.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

This work, which has been a standard since 1908, has been considerably revised and rewritten for the present fifteenth edition. It continues to be an excellent text whose value is attested by long and widespread use.

"It is becoming increasingly clear," the author states in the preface, "that bacteriology has largely emerged from a naturalist period of essentially empirical observation into an analytical, quantitative phase in which the proof of specific bacterial etiology of infectious disease, for example, has been extended into analysis of the functional mechanisms of pathogenesis. Most encouraging is the extent to which the various applied branches of bacteriology are drawing together on a common fundamental basis, and the relating of these forms to other organisms through basic physiological processes, such as respiration, nutrition, and genetic control.

"The pattern is reflected in the development of this book through successive editions; its basic premise has been the assumption that the sound pedagogic approach is that of an understanding of fundamental principles out of which application flows. There are few better illustrations of the importance of apparently impractical 'pure' research than the elucidation of the nutritive requirements of bacteria, with subsequent development of a rational theory of chemotherapy."

HISTOPATHOLOGY OF THE SKIN. By Walter F. Lever, M.D., Instructor in Dermatology, Harvard Medical School; Assistant Dermatologist, Massachusetts General Hospital; Associate in Dermatology, Peter Bent Brigham Hospital; Consulting Dermatologist, Massachusetts Eye and Ear Infirmary. Cloth. Pp. 450, with illustrations. Price $10.00. J. B. Lippincott Company, 227 South Sixth Street, Philadelphia, 1949.

This text, which the author states was "written primarily for dermatologists," will also be of use to the general practitioner who does any amount of work requiring cutaneous biopsies. It will be productive of a better understanding of the histopathology of the skin than has heretofore been readily available, for little consideration is given to dermatology in most textbooks on pathology.

The physical properties of the book are excellent. It is printed on a good grade of enameled paper. There are numerous black and white reproductions of microphotographs with detailed legends and there are some color plates prepared by a special method.

The text covers all those diseases in which cutaneous histologic examination is of value; epidermal and mesodermal tumors are included. A short clinical discussion of each disease precedes the histologic presentation and each chapter is followed by numerous references which serve as a guide for more extensive study.

This text is free from the voluminous footnotes on histopathology, characteristic of dermatologic textbooks, which so frequently lead to confusion rather than understanding on the part of the average reader or student. There are no lengthy discussions of conflicting views. Concerning each disease there is a statement of fact which does not lend itself to the inclusion of controversial material. The pictures add to this clear presentation by their sharp reproduction.

A. P. Ulbrich, D.O.

Current Medical Literature

ANTIHISTAMINIC DRUGS IN THE THERAPY OF THE COMMON COLD

In *Industrial Medicine*, May, 1949, John M. Brewster, M.D., reports that two or three doses of antihistaminic drugs at 4-hour intervals aborted symptoms of the common cold in 90 per cent of the patients treated within an hour after onset; this group numbered 21, 19 of whom were cured. Of 55 patients treated 2 hours after onset, 48 (87 per cent) were symptom-free. Of 156 receiving treatment within 6 hours after onset, 116 (74 per cent), and of 234 receiving treatment within 12 hours of onset, 165 (70 per cent) were also cured. Antihistaminic drugs used were Pyribenzamine, Thenylene, Neoantergan, Histadyl, and Benadryl. The entire series treated consisted of 572 patients. The arbitrary standard dosage was 50 mg., every 4 hours. A 10-day follow-up was made. When the symptoms had disappeared completely 24 hours after treatment was started and remained under control at least 48 hours after treatment ended, the cold was considered aborted or cured.

Since sedation is one of the effects of the antihistaminic drugs, a control group of 77, composed of every sixth patient in the series of 572 reporting to the health service for treatment, was given codeine sulfate and papaverine hydrochloride. Cure was effected in 1 of 2 patients in the control group treated within 1 hour of the onset of symptoms; 5 of 12, 6 hours after; in 7 of 22, 12 hourse after. These results received treatment more than 24 hours after. These results were appreciably less successful than those found in patients treated with antihistaminic drugs.

Rationale is based on the reports of good results in the use of antihistaminic drugs in various allergic conditions, especially hay fever, the symptoms of which are so similar to those of the head cold. The development of the cold may progress from the presence of cold virus in the upper respiratory tract with some trigger mechanism such as chilling, ingestion of food or drink incompatible with the individual, or the inhalation of an irritant. Any of these may set off an allergic reaction which manifests itself with a localized, patchy edema of the mucous membrane of the respiratory tract. The damage done to the mucous membrane permits the accelerated growth of the cold virus and other pathogenic organisms and their invasion of the body. If this actually is the pattern of development, the abortion or cure of the cold may occur if the damage to the tissues by allergic reaction is prevented. Therefore, an important feature of the treatment is the promptness of administration of the drug as soon as cold symptoms appear. This was borne out in the results of Brewster's series.

Control of contagion would be one of the good effects of the wide adoption of antihistaminic drugs, since sneezing and coughing are eliminated. The author predicts, "If properly and universally used, the antihistaminics could reduce the incidence of colds to near the vanishing point."

RECOGNITION AND MANAGEMENT OF CARDIAC AND CIRCULATORY EMERGENCIES DURING ANESTHESIA

S. R. Masiello, M.D., and A. A. Lombardi, M.D., in the *New York State Journal of Medicine*, July 1, 1949, review the common cardiac and circulatory emergencies arising during anesthesia in regard to the choice of anesthesia, so-called nonacute states, reflex cardiac and circulatory accidents, acute cardiac emergencies, and treatment for each of these conditions.

The preferred agent of anesthesia for cardiac patients is ether. Cyclopropane anesthesia has been used but is contraindicated in severe cardiac conditions, and it should not be continued when minor deviations in pulse and blood pressure become apparent, since the shift to major proportions easily may become rapid and dangerous.

Distinguishing the nonacute cardiac states (extrasystole, bradycardia, tachycardia, and sustained hypertension or hypotension) assists in diagnosing more serious accidents.

Masiello and Lombardi discuss reflex cardiac and circulatory accidents in relation to the area involved. Vagovagal and carotid sinus reflexes from the head and neck may begin during surgical or anesthetic manipulation. The vagovagal syndrome is less likely to occur if endotracheal extubation is performed slowly with a relatively deep anesthesia. In vagotonic patients, parasympathomimetic drugs should be avoided and atropine administered preoperatively. The syndrome may vary with an extremely rapid onset of bradycardia and cardiac standstill. Carotid sinus reflexes during anesthesia may occur, sometimes with slow pulse and low pressure or with a sudden drop in pressure.

In thoracic surgery, vagovagal accidents are to be anticipated, especially in pulmonary surgery. When cardiac standstill occurs, cardiac resuscitation with artificial respiration should be started immediately; procaine should be administered only at the resumption of spontaneous action, especially in the presence of fibrillation. The foregoing is true in cardiac surgery. Other events also must be anticipated from cardiac manipulation, such as complete absence of blood pressure when the myocardium has been palpated during cardiopericpexy or the marked change in pulse pressure occurring sometimes during ligation of a patent ductus. A marked fall in pressure commonly occurs in the second stage of a sympathectomy for hypertension.

Of the reflexes from the abdomen caused by traction or pressure, that of the celiac plexus is most important. A sudden unexplainable fall in blood pressure, slow or absent pulse, and ashen-gray color constitute sufficient indication for removal of the stimulus. A vagal reflex with coronary spasm and cardiac arrest, like the syndrome sometimes occurring with severe pulmonary embolus but differing from the vagovagal type of reflex which affects the conduction mechanism of the heart, is initiated by rapid gastric dilatation. Another cause is an apnea technic without intubation. Rigid abdominal musculature in the presence of otherwise adequate depth of anesthesia with ashen-gray cyanosis, fast feeble pulse, and drop in blood pressure are the symptoms. Other reflex effects on the circulation, initiating in the abdomen, are discussed briefly, namely, the parasympathetic type with fall in pressure, a shock-like state from the sudden removal of a large tumor or fluid mass, shock-like syndrome from clamping or ligation of the large vessels, and marked rise of pressure during manipulation and subsequent severe drop from the removal of adrenal medulla tumors or pheochromocytomas. Ill effects may develop from release of a tourniquet on the lower limbs or change of posture with the use of a kidney rest or gallbladder brace, or from peripheral dilatation.

Unexplainable shock during anesthesia can be attributed to coronary disease. Diagnosis of heart block, the only sign of which is a persistent pulse rate of 30 to 50 per minute, must be confirmed with electrocardiography. Auricular fibrillation, unassociated with decompensation; ventricular fibrillation, suspected from extrasystoles and thready tachycardia are sometimes actually seen in intrathoracic surgery, and acute cardiac failure with pulmonary edema with low or normal pressure, weak rapid pulse, hyperpnea, cyanosis, "wet respiration," and moist rales on auscultation, are other possible emergencies.

BACKACHE AND THE ORTHOPEDIC SURGEON

If irreparable damage has not occurred, careful analysis and palliative treatment will correct backache and prevent recurrence. A. M. Rechtman, M.D., explains in *Industrial Medicine*, May, 1949, that only a small percentage of patients complaining of back pain need surgery.

Causes of backache are mechanical strain, absorption from a distant focus of infection, ruptured lumbosacral disk, spinal cord tumor, strain on the ligamentous attachments, atophacious gout, prostatitis, endometritis, and diseased, congested, or retroverted uterus. Congenital anomalies are not so frequently responsible for backache as might be anticipated. Occupational stress and strain and lowered general resistance sometimes predispose to backache.

Rupture of the intervertebral disk with protrusion of the nucleus pulposus requiring surgery, once thought to be responsible for as much as 90 per cent of all cases of low-back pain, is now considered by Rechtman to be associated with less than 1 per cent of the patients to such an extent that surgery for disk symptoms is necessary. Rechtman states that damage to the disk may cause disk symptoms but may not be serious enough that the nuclear material protrudes. Therefore, many patients respond well to conservative treatment. In fact routine surgery has not been generally successful, since the pain will persist, if back mechanics are poor or if degenerative changes are present. The author attempts fusion of the spine after disk removal in the presence of arthritic involvement of the local area, poor back mechanics, or a history of repeated episodes of back pain. If the tissues are exposed to remove the disk, it is wise to have predetermined whether fusion of the spine is desirable in order to combine fusion with disk removal in a single operation. The effect of procaine injections at trigger points helps to determine the pathology of localized or referred pain.

True sciatic neuritis on a toxic or infectious basis, possibly with avitaminosis or lead poisoning, exhibits hyperactive knee jerks and sometimes absent or retarded ankle jerks, and flabby or atrophied gluteal areas. Static or postural strain, which occurs in at least half the patients complaining of back pain, is less amenable to treatment and more likely to frequent recurrence. Any strain, not only of the back, may cause the back to ache, such as bow legs, knock knees, accommodation to a new occupation, a new automobile seat, undue exercise, et cetera. Sometimes intra-abdominal and intrathoracic disturbances are responsible.

In backache caused by local infection with pain and stiffness when the position is changed or local irritation like myofaciatis or tendinitis and muscle spasm, pain is not often relieved by treatment directed to the local areas of infection but by mechanical support of the back.

Conditions which must be considered by the physician are exaggeration of symptoms and malingering. If arthritis or a disease process is not evident and the patient moves the trunk as a unit from the hip joints, symmetrically, through a lesser range than normal, he is malingering. Exaggeration is connected with a low threshold of pain and is easily recognized by the physician.

Lordosis occurs if the ligaments binding the vertebrae are strained. The pain appears when the lumbar curve flattens in the recumbent position. The patient with an arthritic spine shows this same forward bending of the spine but in addition has muscle spasm. A bed board and firm springs and mattress protect and support the spine. Postural exercises help correct a severe lordosis, since poor posture usually provokes the condition. Lordosis may be considered responsible for a number of conditions where it is present, such as susceptibility to frequent colds and chest diseases, loss of intra-abdominal tension and ptosis, inefficient portal circulation and circulation to the extremities. Some authorities think it aggravates arthritis.

Flat back may result from the strain of long periods in bed after illness and surgery or the change to low-heeled shoes. Motion is limited, especially on hyperextension.

The sacroiliac joint is not often responsible for backache, except from torsion strains or repeated minor traumata from faulty posture. The true sacroiliac lesion follows atrophic arthritis or acute or subacute inflammations such as puerperal sepsis. Strains on the structurally weak lumbosacral joints, its ligaments and facets cause the pains usually attributed to the sacroiliac.

It is apparent that the patient as well as the back must be studied to determine whether the cause is systemic, local, traumatic, developmental, infectious, or neoplastic. Detailed history localizes sites for the x-ray studies and makes possible interpretation of the films and the analysis of the case. Evaluation of the condition in regard to traumatic, infectious, and disease processes and tumor formation should be justified and confirmed by studies of anteroposterior, lateral and oblique views, the latter showing clearly the interarticular joints being, in Rechtman's opinion, most helpful. Spot films at the most painful area may be necessary to demonstrate changes not apparent in the more general views. A lateral view made with contrast media often shows disk disturbances that escape notice in the full lateral view of the lumbar spine. The fifth lumbar body is best visualized in an anteroposterior spot film taken with the knees flexed to flatten the lumbar curves. Pelvic films show hips and sacroiliac joints, oblique views, especially. Study of stereoscopic views may assist in the diagnosis.

When the patient has been treated, then the back may receive therapeutic attention. The strain should be relieved and the cause removed. The patient should learn to limit his activities to a degree compatible with his abilities. Body mechanics should be regulated and improved. This important prophylaxis includes support, for example, the use of firm bedsprings, high, closed-back corset coming to about the ninth thoracic vertebra laced in front or closed with buckles and straps, possibly reinforced with steel uprights conforming to the trunk contours, plaster and celluloid jackets, balanced shoes, Whitman plates, braces, and other beneficial measures, such as postural exercises. Sitz baths, moist hot compresses and alcohol rubs, exercise and walking and salicylates are excellent palliative measures.

INFECTIOUS MONONUCLEOSIS WITH NEUROLOGIC COMPLICATIONS

The benign outcome of infectious mononucleosis is challenged by Vera B. Dolgopol, M.D., and George S. Husson, M.D., in *Archives of Internal Medicine*, February, 1949. It is recalled that serious and sometimes fatal complications such as hepatitis, thrombocytopenia, myocarditis, spontaneous rupture of the spleen, and involvement of the central and peripheral nervous system can occur. A case demonstrating the last is presented in detail along with autopsy findings. Diplopia developed before lymphadenopathy and splenomegaly and progressed to a bulbar lesion with respiratory paralysis and paraplegia. Pathology of the nervous system is due chiefly to hemorrhage, most especially in the gray matter but also in the white matter of the brain and spinal cord.

MORTON TERRY, D.O.

EXPERIMENTAL PULMONARY INFARCTION

D. W. Chapman, M.D., and others, writing in *Archives of Internal Medicine*, February, 1949, consider the role of abnormal pulmonary circulation in pulmonary infarction following an embolus.

Thrombi formed in the jugular veins were released into the circulation of dogs which were autopsied after 10 days and a search for pulmonary infarcts made. In this series the authors report no infarcts in those animals with previously normal lung fields but in those in which pulmonary congestion was induced by alpha-naphthylthiourea prior to release of embolia, a high percentage of infarction occurred. The conclusion drawn therefore is that emboli per se do not cause infarction in the absence of impairment of circulation in the bronchial arteries, pulmonary edema, or congestion.

MORTON TERRY, D.O.

GASTROSCOPIC AND HISTOLOGIC APPEARANCES OF THE GASTRIC MUCOSA BEFORE AND AFTER VAGOTOMY FOR PEPTIC ULCER

J. B. Kirsner, M.D., and others report in the *Archives of Internal Medicine*, August, 1949, that they find that the gastroscopic appearance of the mucosa is not significantly altered by vagotomy nor is the histologic structure. Rarely, however, severe gastritis and degeneration of the acid-secreting cells occur following this procedure.

Most patients suffer gastric retention for some time following vagotomy though prolonged food retention evidently did not predispose to gastritis or accentuate pre-existent gastritis.

Very significant is the finding that benign gastric ulcer may develop or recur from several months to several years after vagotomy.

Case reports, tables, and microphotographs are included.

MORTON TERRY, B.A., D.O.

PUBLIC EDUCATION ON HEALTH CONFERENCE

(Continued from page 206)

advantage of this conference by presenting at it, as a part of the agenda, matters which are of particular interest to their societies. In this manner all the divisional societies have had the benefit of the discussion and analysis of the particular problems confronting one of the societies. Generally it has been found that such a problem is a forerunner of similar circumstances or occurrences in other states at a later date.

It is believed that the conference this year will be of particular value to members of the osteopathic profession interested in public health matters inasmuch as the following year will see the resumption of legislative activity relating to public health laws in many states. The increased interest shown by both industry and labor organizations in the past year in matters relating to the health interests of their employees and members makes it important that every osteopathic physician active in developing a public health program which will bring to the people of his state the most efficient and comprehensive health care understand and be able to participate in the challenging problems which both the state governments and the large industries and labor organizations are taking under consideration. It is only necessary to point out that the enactment of disability benefit laws in some five states already has had an important influence upon the relationship of the physician and his patients. In the State of California this law has already been extended to include hospitalization benefits. Similarly in the employment contracts between industry and labor the health problems of the employees have been covered by such plans as the sickness benefit compensation plans and the illness and accident protection guaranteed by such contracts.

Each year sees new developments and new problems for the profession to consider and for which to make plans. Therefore, it is essential that the osteopathic profession, as well as the other health professions, continually revise and reorganize its public health programs so as to insure keeping pace with the modern tempo of health service organizations. Hotel reservations for the series of meetings may be made through the Bureau of Conventions, American Osteopathic Association, 212 E. Ohio Street, Chicago, Illinois. Cooperation with the Bureau of Conventions will insure that your stay in Chicago will be a comfortable and enjoyable one.

Department of Public Relations

CHESTER D. SWOPE, D.O.
Chairman
Washington, D. C.

STATE HEALTH OFFICERS CONFERENCE

The Association of State and Territorial Health Officers met in the 48th annual convention with the Surgeon General of the Public Health Service and the Chief of the Children's Bureau in Washington on October 19-22, 1949.

Resolutions included disapproval of compulsory health insurance legislation pending in Congress because it does not include adequate provisions for preventive medicine and development of modern public health service, support for a cabinet Department of Health headed by a career public health physician and for trebling funds for maternal and child health and crippled children services.

Chronic Disease Committee recommends—heart disease: control should be developed in relation to a complete health program rather than an isolated program; diabetes: Public Health Service and State Health Departments should evaluate use of "self-testing" urinalysis kits as a case finding device; cancer: State Health Departments should use Federal cancer control funds to provide nonaccredited and accredited training in related medical specialties; glaucoma: Public Health Service should conduct investigations for screening general population; rheumatism and arthritis: Public Health Service should investigate cause and methods of controlling; nutrition: Public Health Service and State and local Health Departments should conduct pilot studies for efficient methods of obesity control.

Federal Relations Committee recommends—rapid treatment centers: Public Health Service should bear costs of rapid treatment centers, enabling States to expand outpatient venereal disease treatment with Federal allotment; matching money: all matching fund requirements for Federal funds should be uniform; "block matching": that State expenditures in public health be used to match any Public Health Service allotment and that matching of specific categorical allotment by specific types be discontinued.

Infectious Disease Committee recommends—that Public Health Service evolve uniform quarantine procedure as a guide for State and Territorial Health Departments; that Public Health Service draft model bill for isolation, quarantine and management of Hansen's Disease.

Hospital Survey and Construction Authorities Committee recommends—that Congress promptly provide funds for study and demonstrations authorized under Public Law 380 for coordinated use of hospital services and facilities; endorsement of action of U. S. Senate on the principles contained in S. 1453 (Medical Education Aid bill) and request for favorable action by Congress; endorsement of Senate bill 2692 amending the Federal Property and Administrative Services Act of 1949 to make available surplus property and equipment to tax supported and to nonprofit medical institutions, hospitals, or similar institutions providing health care.

VETERANS ADMINISTRATION

Veterans Administration on November 14 reminded service-connected disabled veterans seeking home-town medical care that they must first obtain approval from their nearest VA Regional Office if they expect VA to foot the bill for such treatment.

An increasing number of claims for reimbursement have come to the VA Board of Appeals from veterans who failed to obtain VA approval before going to their home-town doctor for treatment. Except in those cases where it was found that emergency treatment for a service-connected disability had been necessary, the claims have been disallowed.

Even in emergency cases, VA emphasized, it is necessary to receive Regional Office approval. However, some leeway is allowed for requesting approval in emergency cases.

Veterans who are hospitalized for emergency treatment with a service-connected disability are required to request approval within 72 hours after they have been hospitalized. Those given emergency treatment on an outpatient basis must have their request in writing at the Regional Office within 15 days after such treatment is begun.

Approval cannot be given on either emergency or non-emergency requests for home town medical treatment if a VA hospital or outpatient clinic is "feasibly available," VA said.

Nonservice-connected cases are not eligible for home-town medical care under the law.

DIATHERMY AND TELEVISION

Operators of type-approved diathermy now are relieved from correcting interference to television receivers. On October 14, 1949, the Federal Communications Commission issued an order effective December 1, 1949, adding a footnote to Section 18.17 of its rules, to provide that in cases of interference to television and other receivers arising from direct intermediate frequency pickup by such receivers of the fundamental frequency emissions of type-approved or certified diathermy or other equipment operating on prescribed fundamental frequencies and otherwise in accordance with the Commission's rules, the operators of such equipment shall not be required to eliminate the resultant interference.

Only owners of type-approved diathermy are so relieved by the order. A current type-approved list appears on the following page.

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

TYPE-APPROVED MEDICAL DIATHERMY EQUIPMENT

Approved electrodes as supplied for test are listed in Certificates of Type Approval issued to manufacturers by the Federal Communications Commission.

MANUFACTURER	TYPE OR MODEL	FREQUENCY	FCC TYPE APPROVAL NUMBERS
Burdick Corporation	X-85	13.56 Mc	D-471
Liebel-Flarsheim Company	SW-227	27.12 Mc	D-472
Raytheon Manufacturing Co.	CMT-4	2450.00 Mc	D-473
Birtcher Corporation	800	13.56 Mc	D-474
World-Wide Electronics, Inc.	FCP(Portable)	27.12 Mc	D-475
Terma Electric Company, Inc.	FS-550	27.12 Mc	D-476
Raytheon Manufacturing Co.	CMD-5	2450.00 Mc	D-477
Electronic Applications, Inc.	EA6	27.12 Mc	D-478
H. G. Fischer & Company	400	27.12 Mc	D-479
World-Wide Electronics, Inc.	48	27.12 Mc	D-480
American Cystoscope Makers Inc.	CC-3000	27.12 Mc	D-481
A. S. Aloe Company	F-7300	13.56 Mc	D-482
Peerless Laboratories, Inc.	FSM	27.12 Mc	D-483
H. G. Fischer & Company	200	27.12 Mc	D-484
American Cystoscope Makers Inc.	VC-4000	27.12 Mc	D-485
General Electric X-Ray Corp.	D-Inductotherm	13.56 Mc	D-486
American Diathermy Productions	XM-400	27.12 Mc	D-487
H. G. Fischer & Company	10	27.12 Mc	D-488
United Diathermy Company	300	27.12 Mc	D-489
Sanitex Electric Company, Inc.	FC-370	27.12 Mc	D-490
Robert A. Fischer	1200	27.12 Mc	D-491
Sanitex Electric Company, Inc.	FC-325	27.12 Mc	D-492
Paul Luckenbach & Company	C-148	13.56 Mc	D-493
Sanitex Electric Company, Inc.	370A	27.12 Mc	D-494
Sanitex Electric Company, Inc.	FC-370B	27.12 Mc	D-495
Medical Quartz Products Co.	1600	27.12 Mc	D-496
H. G. Fischer and Company	300	27.12 Mc	D-497
Electronics Applications, Inc.	EA9	27.12 Mc	D-498
Garfield Medical Apparatus Co.	G60	27.12 Mc	D-499
H. G. Fischer and Company	400	27.12 Mc	D-500
General Electric X-Ray Corp.	E-Inductotherm	13.56 Mc	D-501
Electronic Applications, Inc.	EA7	27.12 Mc	D-502
Garfield Medical Apparatus Co.	G50	27.12 Mc	D-503
Mooradian Hi-Frequency Labs.	Model R	27.12 Mc	D-504
Terma Electric Co., Inc.	FS-200	27.12 Mc	D-505
American Cystoscope Makers Inc.	VC-5000	27.12 Mc	D-506
Burdick Corporation	MF 49	27.12 Mc	D-507
Garfield Medical Apparatus Co.	G20	27.12 Mc	D-508
Electronic Applications, Inc.	EA2	27.12 Mc	D-509
American Diathermy Co., Inc.	K-Z	27.12 Mc	D-510
Hanovia Chemical & Mfg. Co.	27300	27.12 Mc	D-511
Paul Luckenback & Co.	C-153	27.12 Mc	D-512
New Diathermy Company	E	27.12 Mc	D-513
Medical Quartz Products Co.	1800 Xtal	27.12 Mc	D-514
R. J. Lindquist	207-P	27.12 Mc	D-515
R. J. Lindquist	208-P	27.12 Mc	D-516
R. J. Lindquist	204-C	27.12 Mc	D-517
Medical Quartz Products Co.	1600-A	27.12 Mc	D-518
R. J. Lindquist	204-P	27.12 Mc	D-519
R. J. Lindquist	208-C	27.12 Mc	D-520

Conventions and Meetings

Announcements

American Osteopathic Association, Fifty-Fourth Annual Meeting, Chicago, July 10-14, inclusive. Program Chairman, C. R. Nelson, Ottawa, Ill.

Academy of Applied Osteopathy, Post Graduate Teaching Program, Western, December 27-30, 1949. College of Osteopathic Physicians and Surgeons, Los Angeles.

Academy of Applied Osteopathy, Eastern Postgraduate Course, Hotel Statler, New York City, April 3-6.

American College of Osteopathic Internists, Eastern Study Group, Philadelphia, March 30-April 2; annual meeting, Continental Hotel, Kansas City, Mo., October 23-26. Program Chairman, Stuart Harkness, Des Moines, Iowa.

American College of Osteopathic Obstetricians and Gynecologists, Ambassador Hotel, Los Angeles, February 20-22. Program Chairman, Bernard Abel, Toledo, Ohio.

American College of Osteopathic Pediatricians, Region I, New York, March 31.

American College of Osteopathic Surgeons, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Howard A. Graney, Des Moines, Iowa.

American Osteopathic College of Radiology, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, D. W. Hendrickson, Wichita, Kans.

American Osteopathic Hospital Association, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Mr. Edward C. Barron, Detroit.

American Osteopathic Society of Proctology, Shamrock Hotel, Houston, Tex., April 3-5. Program Chairman, Marille E. Sparks, Dallas, Tex.

American Society of Osteopathic Anesthesiologists, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Crawford M. Esterline, Kirksville, Mo.

Arizona, Westward Ho, Phoenix, May.

Arkansas, Albert Pike Hotel, Little Rock, May. Program Chairman, L. J. Bell, Helena.

California, Sacramento, annual convention, May 3-5, Board, April 30, House of Delegates, May 1, 2.

Georgia, Thomasville, May.

Illinois, Knickerbocker Hotel, Chicago, May 12-14.

Indiana, Fowler Hotel, Lafayette, May 14-16. Program Co-Chairmen, H. D. Wolf and John Kenney, both of Indianapolis.

Iowa, Hotel Fort Des Moines, Des Moines, May 15, 16; joint meeting of House of Delegates and Board of Trustees, May 14. Program Chairman, H. D. Meyer, Algona.

Maine, postgraduate seminar, Waterville, March; annual meeting, Samoset Hotel, Rockland, June.

Manitoba, Winnipeg, January.

Michigan, Civic Auditorium, Grand Rapids, October 1-5. Program Chairman, Ralph F. Kraker, Ann Arbor.

Missouri, St. Louis, October 12-14. Program Chairman, Theodore Corcanges, Raytown.

New Jersey, Hotel Stacy Trent, Trenton, March 3-5. See also New York.

New York and New Jersey, Hotel Statler, New York City, October 13, 14.

North Dakota, Rudolph Hotel, Valley City, May. Program Chairman, Harry Homewood, Valley City.

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As an effective, acceptable hematinic, Ovoferrin satisfies the most rigid requirements . . . at all ages and in all conditions where iron is indicated. Since it is palatable and easily assimilated without untoward side effects, it is a selection of choice for . . .

the build-up without a let-down

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For Adults and Children: One teaspoonful 2 or 3 times a day in water or milk.

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ADULTS: One tablespoonful 3 or 4 times daily in water or milk.
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Professional sample on request

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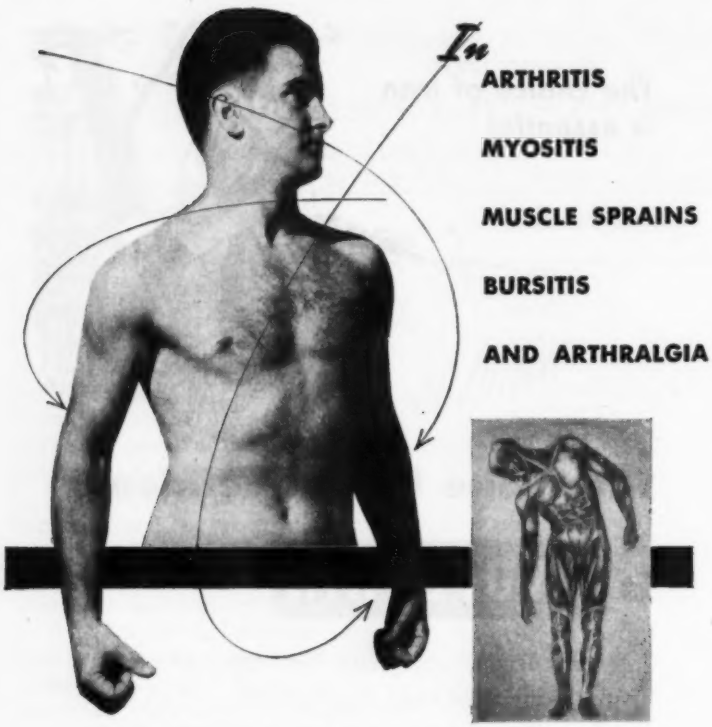

OBJECTIVE IMPROVEMENT may be achieved through the beneficial influences exerted on the pathologic processes by the active hyperemia induced by a Baume Bengué massage.

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Percutaneous absorption of methyl salicylate not only reinforces the topical effects of Baume Bengué but can enhance other systemic measures used to combat the underlying disease processes. The proof of the systemic effects of such preparations was established by the fundamental work of Moncorps, Kionka, Hanzlik, Brown and Scott.

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Northwest Osteopathic Conference (Washington and Oregon Osteopathic Associations), Winthrop Hotel, Tacoma, June 4-7. Program Chairman, E. D. Mosier, Puyallup, Wash.

Ohio, refresher course, Toledo, February; annual meeting, Deshler-Wallick Hotel, Columbus, May. Program Chairman, W. D. Henceroth, Grove City.

Oregon: See Northwest Osteopathic Convention.

Osteopathic Academy of Orthopedists, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Harry F. Shaffer, Detroit.

Osteopathic College of Ophthalmology and Otorhinolaryngology, Los Angeles, fall.

South Carolina, Wade Hampton Hotel, Columbia, May.

South Dakota, State Game Lodge, Black Hills, June. Program Chairman, M. C. Thompson, Watertown.

Vermont, Rutland, October 4, 5. Program Chairman, M. C. Smith, Bennington.

Washington: See Northwest Osteopathic Convention.

West Virginia, Chancellor Hotel, Parkersburg, May 7-9. Program Chairman, T. H. Lacey, Parkersburg.

Western States Osteopathic Society of Proctology, Biltmore Hotel, Los Angeles, September 25-27, 1950.

Wisconsin, Schroeder Hotel, Milwaukee, May 4, 5.

OFFICIAL AND AFFILIATED ORGANIZATIONS

ARIZONA

Maricopa County

See Tucson.

Tucson

A meeting was held October 12.

The officers are: President, Van H. Fossler; vice president, Coy L. Purcell; secretary-treasurer, Albert T. Styles, all of Tucson.

A joint education program, sponsored by the Tucson and the Maricopa County Societies, was scheduled for November 6 in Tucson, with Mr. Richard Darrow to speak on "The Legal Aspects of Practice" and talks by Troy McHenry and William Long, both of Los Angeles.

CALIFORNIA

State Society

A meeting of the Board of Trustees has been scheduled for December 10, 11.

In September a 2-day meeting of the Board of Trustees met to discuss with Mr. Lewis Chapman, Chicago, national fund director, and Mr. Thomas Schumacher, Los Angeles, executive secretary of the state society, plans for a fund-raising campaign for the expansion and improvement of the six colleges.

Component Officers Association

At the September 11 meeting in Fresno it was recommended to the component societies that a Department of Welfare under the Bureau of Public Affairs be established. Edward Randel, Los Angeles, discussed the Cancer Commission and informative educational programs on cancer soon to be available.

The officers are: Chairman, Richard W. Johnson, Arbuckle; vice chairman, Harold K. Dalton, La Mesa; secretary, Richard E. Eby, Pomona.

State Society Auxiliary

Meetings were scheduled for September 20 for the board members and the presidents of component auxiliaries in the home of the state president, Mrs. Lucius B. Faires, Los Angeles, and October 27 at the home of Mrs. David Bosworth, Oakland.

Hospital Association

The fall meeting was scheduled to be held in Los Angeles November 12.

Alameda County

January 12 a Rectal Symposium is scheduled to be conducted by W. Hamlin, Oakland, and John Darby, Martinez.

Citrus Belt

The September 12 meeting in Pomona was devoted to discussion of the Progress Fund Drive.

Fresno

Robert Daniels, Sacramento, was scheduled as guest speaker for the November meeting.

September 25 a meeting was scheduled with the Tulare society.

A regular business meeting was held September 14.

Kern County

The program for free diagnostic treatment of needy rheumatic fever patients was outlined by Miss Mary Driscoll, head of the crippled children's division of the Kern County Health Department at the September 13 meeting.

Los Angeles City

October 11 there was a joint meeting of this society with the West Los Angeles society with talks by Donald M. Donisthorpe, Glen D. Caylor, Mr. Thomas C. Schumacher, state executive secretary, all of Los Angeles, and Mr. Lewis F. Chapman, Chicago, in behalf of the Progress Fund Drive.

Monterey Peninsula

The speaker at the September 14 meeting in Salinas was Harriet L. Connor, Los Angeles, who discussed the newer laboratory tests to aid diagnosis and hormone therapy.

Orange County

Ernest Bashor, Los Angeles, addressed the September 8 meeting in Santa Ana on "Practical Female Endocrinology."

San Diego

A dinner and business meeting was held September 12.

San Gabriel Valley

Charles A. Blind, Los Angeles, presented a paper on "Office Treatment of Eye Emergencies" at the September 15 meeting in San Gabriel.

Southeast

The initial official meeting was held September 15 in Maywood.

The officers are: President, Milton Futterman, Los Angeles; president-elect, Herman Siegal, South Gate; secretary-treasurer, S. Sidney Druckman, Maywood; trustees, Soll R. Satnick, Huntington Park, and Morris I. Harow, Los Angeles.

Southside

The subject announced for the January 5 meeting is "Interpretations of Newer Laboratory Procedures," to be presented by Ralph Alexander, Los Angeles.

Tulare County

See Fresno.

Ventura County

A seminar on hypertension was presented by Franklin Kerr, Fillmore; J. Marshall Reser, Oxnard; Edward Carroll and Nelson Weed, Ventura; Edgar Hoxsie, Maude Emi Jenkins, and Silas Williams, moderator, all of Santa Paula.

West Los Angeles

According to an advance notice "A Discussion of the Metabolic Diseases" was the subject scheduled for the November 8 meeting.

See also Los Angeles City.

COLORADO

State Society

See Rocky Mountain Osteopathic Conference under Special and Specialty Groups.

FLORIDA

State Society

The Board of Trustees met at the Angebilt Hotel, Orlando, September 25.

Sixth District

The August meeting was held at Ft. Lauderdale.

THE INDICATION
DICTATES THE CHOICE OF MEDICATION

Glycerol (Doho) by Exclusive Specific Gravity—and is Process has the Highest Obtainable Virtually Free of Water, Alcohol and Acids

IN ACUTE OTITIS MEDIA
REMOVAL OF IMPACTED CERUMEN
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CONTAGIOUS DISEASE EAR INVOLVEMENTS

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...because its potent decongestant, dehydrating and analgesic action provides quick, efficient relief of pain and inflammation in any intact drum involvement.

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Glycerol (DOHO) ..... 17.90 GRAMS
(Highest obtainable spec. grav.)
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...a potent chemical combination (not a mere mixture), combining Sulfathiazole and Urea in AURALGAN Glycerol (DOHO) Base—because it exerts a powerful solvent action on protein matter, liquefies and dissolves exuberant granulation tissue, cleanses and deodorizes, and tends to exhilarate normal tissue healing in the effective control of chronic suppurative otitis media.

FORMULA:
Urea ..... 2.0 GRAMS
Sulfathiazole ..... 1.6 GRAMS
Glycerol (DOHO) Base ..... 16.4 GRAMS

Literature and samples sent to physicians on request.

DOHO CHEMICAL CORP.—Makers of AURALGAN and O-TOS-MO-SAN NEW YORK 13

IDAHO

Boise Valley

At the October 27 meeting in Caldwell, L. H. Jones, Ontario, Ore., presented the second in a series of papers on applied osteopathy.

The officers are: President, D. W. Hughes, Boise; vice president, Lawrence H. Jones, Ontario; secretary-treasurer, Betty Lou Crane (re-elected), Boise.

ILLINOIS

Third District

A meeting was scheduled for November 17 in Macomb.

Fifth District

Seaver A. Tarulis, Chicago, and Mr. Albert Gardner, executive secretary of the Illinois Osteopathic Association, conducted the program at the October 16 meeting in Hoopeston.

Eighth District

The officers are: President, O. W. Cramer, East St. Louis; vice president, E. Gale Jones, Granite City; secretary-treasurer, Laurin E. Wood, Salem.

The trustee is David A. Waterbury, Marion, with O. W. Cramer alternate.

INDIANA

District One

A meeting was scheduled for September 28 in Indianapolis with George Marjan, Chicago, addressing the society on "Lumbosacral Lesions."

District Two

September 28 was the date set for the meeting in Auburn.

District Four

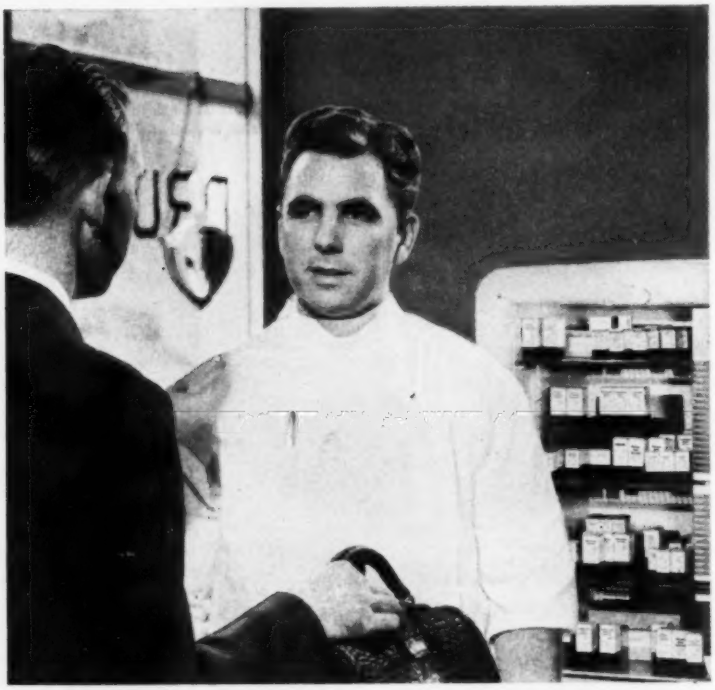
A meeting in South Bend was scheduled for September 28.

Program chairman for the year is P. J. MacGregor, Lawrenceville.

IOWA

State Society

The schedule for the fall district society meetings was as follows: First District, Davenport, October 21; Second



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1. **Immunization routine** *is simplified with three injections of 0.5cc each at monthly intervals.*

2. **Purified toxoids** *assure virtual freedom from reactions due to bacterial protein components.*

3. **Alhydrox****—*CUTTER'S exclusive adsorbing agent—results in a more solid immunity, fewer post-injection reactions, and less pain on injection.*

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****Alhydrox**—*Trade name for aluminum alhydrox adsorption, exclusive with CUTTER.*

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District, Council Bluffs, October 18; Third District, Fairfield, October 20; Fourth District, Mason City, October 16; Fifth District, Sioux City, October 17; Sixth District, Osceola, October 19.

The program scheduled to be presented at each of the meetings was as follows: "Compulsory Health Insurance Legislation," E. H. McKenna, Chicago; "Society Affairs," H. L. Gulden, Ames; and "Diabetes and Its Problems," E. R. Minnick, Des Moines.

First District

The officers are: President, D. D. Olsen, Cedar Rapids; vice president, John Campbell (re-elected); secretary, Lydia T. Jordan (re-elected), both of Davenport. Trustees are Orville L. Schmitz, Manchester, and Kenneth B. Riggle, Des Moines.

Second District

The officers are: President, Gladys Worth Burke, Council Bluffs; vice president, William S. Edmund, Red Oak; secretary-treasurer, William T. Ferguson, Pisgah.

Third District

The officers are: President, Maurice G. Tincher, Fort Madison; vice president, Idris S. Lodwick, Ottumwa; and secretary-treasurer, Georgia I. Chalfont (re-elected), Oskaloosa.

Fourth District

The officers are: President, Roy D. Bennett, Corwith; vice president, Robert K. Richardson (re-elected), Algona; and secretary-treasurer, Wilmoth J. Mack, Radcliffe.

Fifth District

The officers are: President, John W. Hirschman, Cherokee; vice president, W. P. Kelsey, Onawa, and secretary-treasurer, Robert E. Ashmore, Sioux City. The trustees are: J. E. Bunker, Cherokee; W. C. Gordon and Raymond S. Farran, both of Sioux City.

Sixth District

The officers are: President, Robert O. Fagan; vice president, Rachel Hodges Woods; secretary-treasurer, Ruth Moore Paul, all of Des Moines. Donald E. Sloan, Des Moines, is trustee.

KANSAS

State Society

The officers are: President, Roy L. Brown, Topeka; president-elect, R. Raymond Wallace, Wichita; vice president, Thomas O. Osborn (re-elected), Colony; executive secretary-treasurer, Forrest H. Kendall (re-elected), Holton; lay secretary, Mr. C. W. Porterfield, also of Holton. The trustees are: Oscar C. Kappler, Liberal; William S. Childs, Salina; Courtney B. Myers, Madison.

The committee chairmen are: Public relations, Mr. Porterfield; membership, J. W. Morrow, Bellefontaine; professional education and development, Clinton B. Hash, Seneca; vocational guidance, J. D. Raynesford, Hillsboro; ethics and censorship, Dr. Osborn; hospitals, Robert L. Wright, Wichita; public and professional welfare, Richard D. Gibson, Winfield; constitution and bylaws, Frank W. Shaffer, Salina; local arrangements for fall meeting, John W. Willis and Charles Stees (co-chairmen), both of Wichita; local arrangements for spring meeting, Thomas B. Powell and B. L. Gleason (co-chairmen), both of Larned; convention program, Irwin J. Conant, Meriden; necrology committee, C. E. Brown, Topeka; osteopathic progress fund, Harvey H. Steffen, Wichita; industrial and institutional service, Dr. Myers; clinics, V. R. Cade, Larned; public health and education, Dr. Gleason; maternal and child health, W. H. Dunlap, Girard; legislature (co-chairmen) E. Claude Smith, Topeka, and Frank E. Loose, Newton; advisory to legislature committee, Irwin Elliott Nickell, Smith Center; veterans affairs, Joseph W. Stella, Topeka; social security medicine, D. W. Hendrickson, Wichita.

At the annual convention in Topeka, October 1-5, the following papers were presented: "Proctology for the General Practitioner," D. L. Green, Kirksville, Mo.; "Differential Diagnosis of Acute Internal Problems" and "Modern Surgical Care of Internal Problems," B. L. Gleason, Larned; "Radiology," D. W. Hendrickson, Wichita; "Rheumatic Fever," Frank W. Shaffer, Salina; "Fractures for the General Practitioner," L. C. Nagel; "Differential Diagnosis of Upper Urinary Pathology" and "Modern Management of Prostate Hypertrophy," A. A. Choquette; "Etiology and Diagnosis of Gastric Symptoms," C. H. Morgan; "Local Anesthetics," Herbert Ramsey; "Value of the Electrocardiogram," Jacob J. Rosen, all of Kansas City, Mo.

South Central

Clinical reports by P. W. Gibson and Richard Gibson, both of Winfield, were

presented to osteopathic physicians from five counties at the September meeting in Winfield.

KENTUCKY
State Society

The officers are: President, F. V. Chambers, Owensboro; vice president, Ralph S. Brown, Warsaw; secretary, Harold D. Benteen (re-elected), Ashland; treasurer, Nora Prather (re-elected), Louisville.

Members of the executive board are: Edmund H. Bouton, Frankfort; Carl J. Johnson and Martha E. Garnett, Louisville; Henry P. Lawrence, Hawesville, and W. Orville Mayfield, Sacramento.

The committee chairmen are: Program, Dr. Garnett; membership, Dr. Prather; public health and education, Dr. Johnson; vocational guidance, Joseph O. Day, all of Louisville; publicity, Dr. Mayfield; ethics, Vernon J. Sloan, Lancaster; public and professional welfare, William B. Faxon, Bowling Green; insurance, Dr. Johnson; George E. Heibel, Lexington, and Dr. Mayfield.

LOUISIANA
State Society

The officers are: President, Melbert R. Higgins, Lafayette; vice president, A. E. Stanton, Crowley; secretary, William C. Conner; treasurer, R. H. Walton, both of New Orleans.

At the annual meeting October 28 at Lake Charles the following papers were presented: "The Osteopathic Profession, 1949" and "A Basis for Legislative Progress in Louisiana," Mr. Milton McKay, Chicago; "Structural X-ray Interpretations and Corrective Procedures" and "Herniated Disc," J. A. Keller, Kirksville, Mo.

MARYLAND
State Society

The officers are: President, Christopher L. Ginn, Baltimore; vice president, Gifford E. Luke, Hagerstown; secretary-treasurer, Joseph W. Lindstrom (re-elected), Baltimore.

Committee chairmen are: Legislative, Frank B. Tompkins; public affairs, Dr. Ginn, both of Baltimore; professional affairs and nominating, Gifford E. Luke; auditing, Henry Dwight Shellenberger, Baltimore; vocational, Evelyn C. Luke, Hagerstown; program and ethics, Grace R. McMains, Baltimore; veterans, John K. Rye, Bethesda.

The annual meeting was scheduled for October 9 in Baltimore.

MASSACHUSETTS
Boston (Suffolk County)

The officers are: President, Edward B. Sullivan (re-elected) and secretary-treasurer, Frank M. Vaughan (re-elected); both of Boston. Stanley W. Kimball, Boston, is trustee.

MICHIGAN
Southeastern District

A regular meeting was held in Milan on September 11. Ralph Kraker, Ann Arbor, was appointed program chairman for the 1950 state convention, for which the district is to have charge of general arrangements and program.

A meeting was scheduled for November 13 in Milan.

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Impetigo Contagiosa

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Absence of sensitization or local allergic manifestations following its use makes Bacitracin Ointment-C.S.C. especially valuable in topical therapy. The period of therapy is governed by the clinical situation under treatment, and not by the shortcomings of the medication.

Bacitracin Ointment-C.S.C. is indicated in the treatment of many cutaneous infections: infectious eczematoid dermatitis, infected ringworm, infected eczema, ecthyma, infected wounds and ulcers, furuncles and carbuncles. It makes an excellent surgical dressing for draining wounds.

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Tri-County

G. G. Pease, Grand Rapids, addressed the September meeting in Kalamazoo on the detection and diagnosis of early cancer. The October meeting was scheduled for the nineteenth in Kalamazoo.

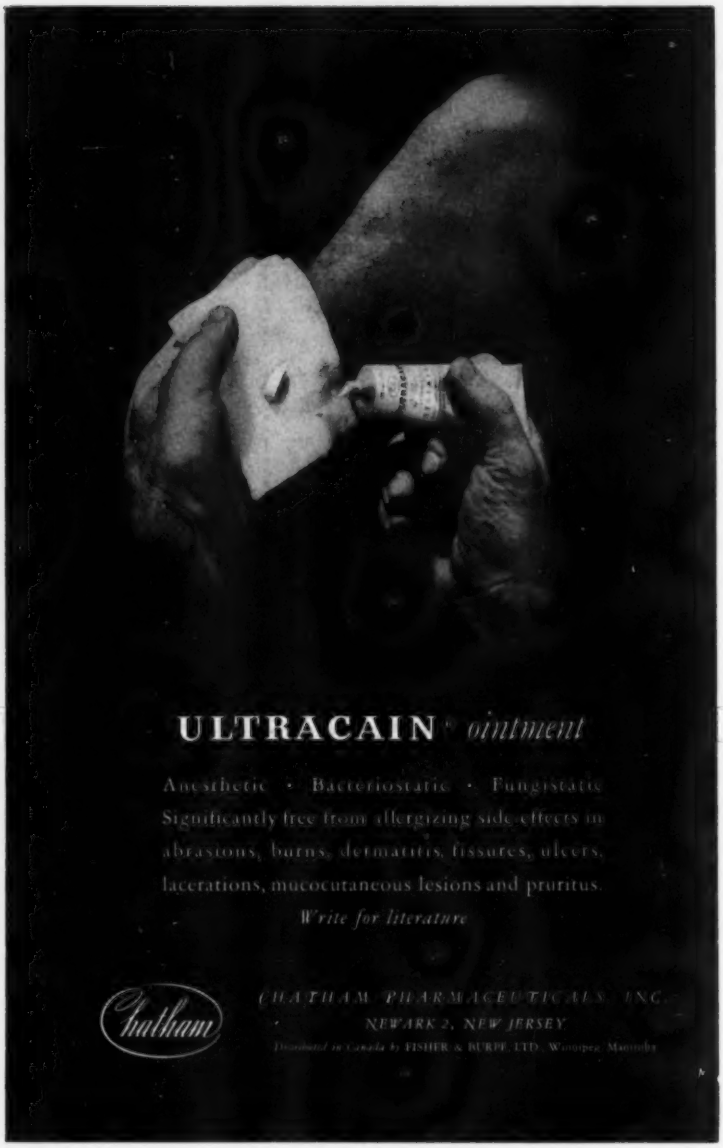
MISSOURI
Central Ozark

A meeting was held October 6 with the staff of the DeWitt Osteopathic Hospital in Waynesville. Professional surgical and anatomical films were shown. The succeeding meeting was scheduled to be in Rolla.

Jackson County

The officers are: President, James A. DiRenna; president-elect, Harold W. Witt, both of Kansas City; vice president, Fred J. Zammar; secretary-treasurer, Luther W. Swift (re-elected), both of Independence; trustee, Carroll S. Anderson; auditor, Edna M. Bangs, both of Kansas City.

Committee chairmen are: Child health conference, program, Lee E. Davidson; exhibits, Lawrence V. Devine, both of Kansas City; publicity, Emory O. Fisher, Independence; banquet and entertainment, Roy V. Culp; clinics, Robert R. Tonkens; courtesy, Joseph Yasso; educational and student enrollment, Clayton H. Morgan; ethics and censorship, Sidney J. Johnson; government sponsored medical programs, Charles A. Povlovich; hospital coordination, Alfred E. Linville; industrial, Edward D. Reese; insurance, Frank E. Day; membership, Grover N. Gillum; public health and hygiene, Milton S. Steinberg; philanthropic, Charles G. Stephens; ra-



dio, Donnavan D. Ludwig; statistics, Glenn W. Springer; telephone directory, Charles S. Kramer, and ways and means, Arthur L. Antry, all of Kansas City; public relations, Theodore Corcanges, Raytown.

North Central

The officers are reported in the November JOURNAL.

Committee chairmen are: Membership, Byron I. Axtell, Princeton; ethics, M. E. Elliott, Chillicothe; hospitals and clinics, C. C. Enoch, Brookfield; public relations and statistics, J. E. Prior, Milan; legislation, M. E. Elliott; public health, Paul Deem, Brookfield; veterans committees, Gene T. Malone, Marceline.

Northeast District

At the meeting October 13 in Bethel talks were given by Mr. Harry Farrar, Jefferson City, public relations director of the state society; F. C. Hopkins, Hannibal, and D. A. Squires, Fulton.

Ozark

Russell Lynch, Tulsa, addressed the September 15 meeting.

St. Louis

The officers and trustees were reported in the September JOURNAL.

Committee chairmen are: Membership, Paul E. Courtney; ethics, Collin Brooke; hospitals, H. M. Stewart; statistics, Quintus L. Drennan; legislation, E. E. Farley, all of St. Louis; vocational guidance, Ellsworth B. Whitmer, Webster Groves; public health, Russell Glaser; industrial and institutional service, E. A. Roddy, and public relations, E. E. Farley, all of St. Louis.

According to an advance announcement, Otto J. Wilhelmy, M. D., was scheduled to present a paper on "Prostatic Carcinoma" at the October 18 meeting in St. Louis.

MONTANA

State Society

The officers were reported in the November JOURNAL.

The trustees are: C. L. Shafer, Jr., Helena; F. B. Sundelius, Kalispell; W. E. Crawbuck, Butte.

Committee chairmen are: AOA membership, F. L. Anderson, Miles City; professional education, W. E. Monger, Dillon; hospital, M. D. Nielsen, Billings; vocational guidance, T. G. Gunderson, Billings and R. D. Wheaton, Helena; public health and education, J. R. Mathis, Miles City; industrial and institutional, H. O. Harris, Billings; clinics, Dr. Shafer; legislative, E. S. Edwin, Great Falls; obstetrics, G. H. and M. W. Payne, Columbus; veterans, J. P. Campbell, Bozeman; publicity, Asa Willard; professional development, Hilda E. C. Johnson, Helena; constitution and bylaws, G. M. McCole, Great Falls; state and federal coordinator, R. A. Elliot, Forsyth; MOA membership, L. A. Crew, Billings; and information and statistics, Lavina A. Ketchem, Glendive.

NEBRASKA

State Society

The officers are: President, Angela M. McCreary, Omaha; vice president, Newell A. Zuspan, Grand Island; executive secretary-treasurer, Mr. Robert H. Downing, Superior. I. N. Morgan, Steele City, is trustee.

At the annual convention in Lincoln, October 7, 8, speakers were H. A. Rosenau, Geneva; E. B. Drost, North Platte; O. D. Ellis, Lincoln; Otterbein Dressler, Philadelphia; Rachel Hodges Woods, Des Moines, Iowa; H. V. Hoover, Tacoma, Wash.

State Society Auxiliary

The officers are: President, Mrs. Ivan Lamb, Palisade; vice president, Mrs. Earl A. Purtzer, Scottsbluff; secretary-treasurer, Mrs. A. G. Zuspan, Aurora.

NEW HAMPSHIRE

State Society

At the annual meeting, September 26, 27 at New Castle, the program scheduled included "Osteopathy Then and Now," Gervase C. Flick, Chestnut Hill, Mass.; "Personalities of the Great Doctor," Alex F. McWilliams, Myron B. Barstow, and George W. Goode, all of Boston.

NEW JERSEY

Essex County

The officers were reported in the September JOURNAL.

Chairmen are: Internal affairs, John H. Beckman, Caldwell; professional development, Crawford A. Butterworth, Millburn; public relations, Herbert Weber, East Orange; legal and legislative, Charles E. Luxton, Nutley, and professional services, Edward H. Johnson, Montclair.

NEW MEXICO

State Society

The officers are: President, Walter E. White, Clovis; president-elect, George C. Widney, Jr.; vice president, William D. Andrews; secretary-treasurer, Roderick K. Widney, all of Albuquerque. Trustees are H. E. Donovan, Raton; James H. Baxter, Lordsburg; Lawrence C. Boatman, Santa Fe; Paul S. Jones, Las Cruces; George Cozma, East Vaughn, and J. Paul Reynolds, Roswell.

Committee chairmen are: Public education on health and liaison, Dr. Boatman; membership, Edward L. Miller, Portales; Osteopathic Progress Fund and A. O. A. Home Office Building Fund, Dr. Cozma; publicity, H. D. Thomas, Albuquerque; hospitals and clinics, Dr. Donovan, Raton; historian, Charles A. Wheelon, Santa Fe; ethics and censorship, Wilford D. Horton, Ruidoso; public relations and placement, Roderick K. Widney; professional liability and insurance, M. C. Sims and Jon M. Hagy, Albuquerque, and Edmund L. Thielking, Roswell; resolutions, Charles B. Marsh, Santa Fe; legal counselor, Mr. W. Peter McAtee.

Central

The officers are: President, Joseph M. Peterson; president-elect, Floyd W. Best; vice president, James O. Beall; secretary-treasurer, J. Deane Evans. All are from Albuquerque.

NEW YORK

State Society

The officers are: President, Eugene J. Casey (re-elected), Binghamton; vice president, Clarence E. Long, Jr., Buffalo; secretary, Robert E. Cole (re-elected), Geneva; treasurer, Bruce C. Tompkins (re-elected), Ithaca; sergeant-at-arms, Alfred R. Gildersleeve, Mt. Vernon. Directors are David J. Bachrach, New York; John R. Pike, Albany; William S. Prescott, Syracuse; George T. Smith, Rochester, and William B. Strong, Brooklyn.

City of New York

William B. Strong, Brooklyn, was scheduled to address the society October 19 on "The Determination and Evaluation of Rheumatic Carditis."

OHIO

Third District Academy (Cleveland)

Lloyd A. Seyfried, Detroit, addressed the Cleveland group September 12. His subject was "Treatment of Deafness Today." Colored films illustrated the lecture.

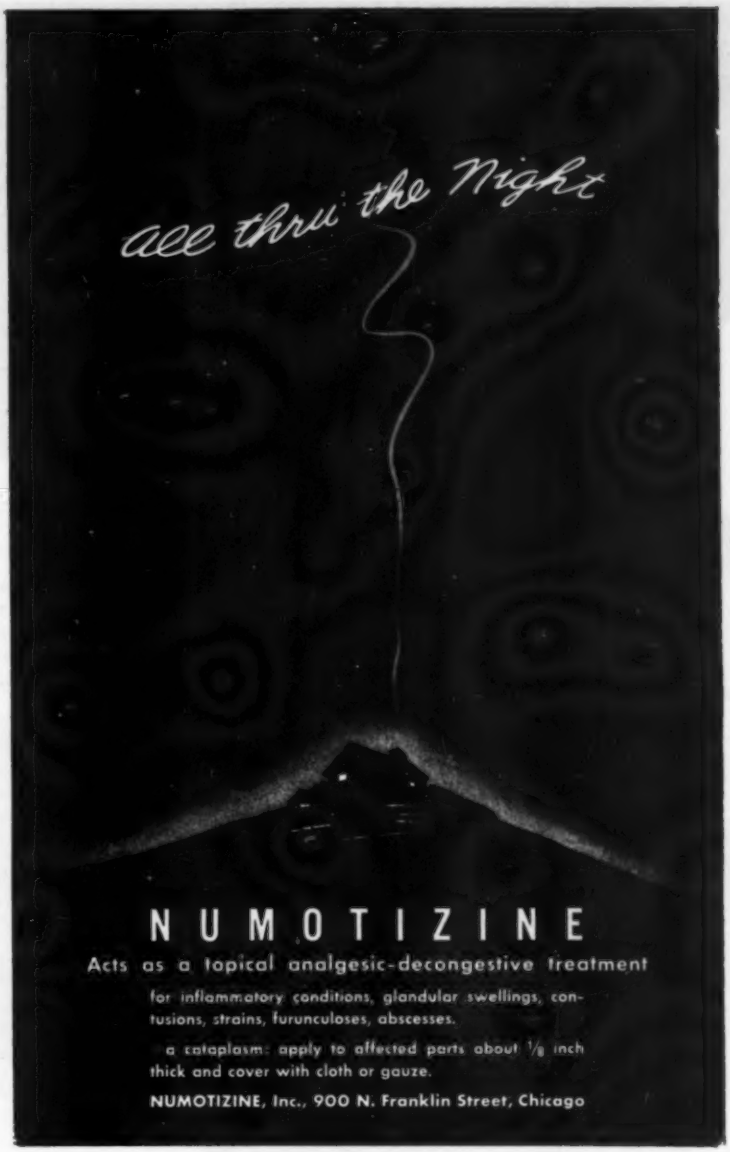
Twelfth District Academy (Springfield)

The October 5 meeting in Springfield was concerned with a business session and round table discussion.

OKLAHOMA

State Society

At the annual meeting in Tulsa, October 18-20, the following papers were scheduled to be presented: "Management of Peripheral Ulceration and Gangrene," "Modern Day Management of Varicose Vein Problems," and "Peripheral Manifestations of Arteriosclerosis," W. Donald Baker, Los Angeles; "The Acute Patient," and "1000 Structural Patients," B. E. Laycock, Des Moines; "The Function of the Public Health Labs," F. R. Hassler, M. D., Oklahoma City; "Osteopathy Today," R. C. McCaughan, Chicago; "The Acute Abdomen and the Surgical Diagnosis," "Preoperative and Postoperative Care for General Practitioner," and "Management of Patients," A. C. Johnson, Detroit; "Pregnancy Problems and Their Treatment," "Management Procedures of Difficult Cases," and "Uterine Bleeding," R. B. Bachman, Des Moines, Iowa.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Past Presidents Organization

The officers are: President, J. Paul Price (re-elected), Oklahoma City, and secretary-treasurer, T. G. Billington (re-elected), Seminole.

Cimarron Valley

The officers are: President, Herbert C. Coyne, Drumright; vice president, James E. William, Tulsa, and secretary-treasurer, Joe W. Hanson, Cleveland.

Kay Osage District

Wallace A. Laird, Ponca City, discussed "Cranial Fractures" at the September 8 meeting in Tonkawa. H. C. Baldwin, Tulsa, was scheduled to be guest speaker October 6 in Pawhuska.

South Central

The officers are: President, Charles A. Bumgardner, Chickasha, and secretary-treasurer, Eugene F. Ross, Lindsay.

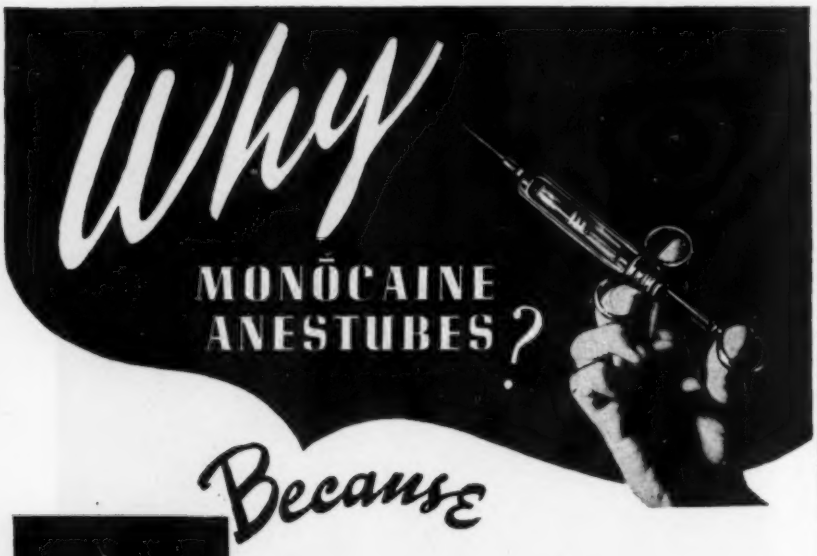
Southeastern

The officers are: President, J. A. Servais; vice president, Robert W. Akins, Jr., both from Antlers, and secretary-treasurer, Audrey L. Fountain, Hugo.

OREGON

State Society

The officers are reported in the August JOURNAL.



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The committee chairmen are: Public relations, E. L. Burnham, Oregon City; Osteopathic Progress Fund, W. W. Howard, Medford; public and professional welfare, Lyle L. Ackerson, St. Helens; vocational guidance, H. W. Merrill, Tigard; public health coordinator, James R. Woodmansee, Portland; public education on health, D. E. Reid, Lebanon; legislative insurance and insurance auditing, Ira J. Neher, Portland; hospitals, A. Verne Jackson, Forest Grove; membership and ethics, Wesley P. Goulding, Corvallis; graduate location, Orel L. Hutchins, Pendleton; convention, Harold D. Groves, Portland; Veterans Administration affairs, Russell F. Kenaga, Sr. Dr. Reid is Federal-State coordinator and editor of the bulletin.

Willamette Valley

Meetings were scheduled for October 22 and November 26.

PENNSYLVANIA

State Society

The officers are: Michael Blackstone, Allentown; president-elect, Leo C. Wagner, Philadelphia; vice president, Frederick E. Arble, Carrolltown; secretary-treasurer, Sidney W. Cook, Towanda; executive secretary, Mr. George W. Thomas (re-elected), Harrisburg.

The District chairmen are: Arthur M. Flack, Jr., Philadelphia, Dr. Wagner, Sterling L. Harvey, Easton, John L. McCorkle, North Mehoopany, Isadore Siegel, Lititz, Robert H. Abbott, Muncy, Alexander J. Lyons, Grove City, and Rudolph A. Abraham, McKeesport.

Committee chairmen are: Legislative, Joseph C. Snyder, Philadelphia; clinics and hospitals, Galen S. Young, Chester; constitution and bylaws, Harold L. Miller, Harrisburg; ethics and censorship, Otto A. Meyn, Erie; industrial relations, Frederick E. Arble; insurance, Alexander J. Lyons; membership, Isadore Siegel; college relations, James M. Eaton, Philadelphia; P. O. A. journal publications, Raymond Ellis Dietz, Harrisburg; professional education, Roy E. Hughes, Indiana; public assistance, George B. Stinemen, Harrisburg; public health, Reed Speer, Pittsburgh; public health education, William H. Behringer, Allentown; refresher course, Frederick E. Arble; veterans, Clyde S. Saylor, Philadelphia; vocational guidance, Anton H. Claus, Philadelphia.

District One

The November 3 meeting in Philadelphia was held for the election of officers.

District Three

David Shuman, Philadelphia, addressed the Lehigh Valley group October 13.

District Four

A meeting was scheduled for October 26 in Scranton.

District Five

According to an advance announcement, the October 30 meeting was to be held in Lancaster.

RHODE ISLAND

State Society

The monthly meeting at Cranston, September 8, featured "The More Common Shoulder Lesions," Samuel L. Gants, Providence; "Psychosomatics as Related to Osteopathic Care," W. B. Shepard, Edgewood, and "Prevention of Recurring Sacroliac Lesions," C. Edward Farnum, Warren.

TENNESSEE

State Society

The officers are: President, Richard H. Alexander, Greenback; president-elect, John C. Emmons, Chapel Hill; vice presidents, F. R. Mahagan, Vonore (East), Sunora Whiteside, Nashville (Middle), John M. Moore, Jr., Trenton (West); secretary-treasurer, Helen Terhuwen Godat (re-elected), Nashville.

The program announced in advance for the annual meeting at Knoxville October 7-9 included symposia on "The Pneumonias" and "Rheumatic Fever" and a study session on appendicitis, cholecystitis, intestinal obstruction, and reflex ileus presented by Dorsey A. Hoskins and Robert S. Sedar, both of Kansas City; a discussion of professional matters, "The Value of Structural Diagnosis," "Osteopathy at Work," Stephen M. Pugh, Everett, Wash., and research films by Louisa Burns and Ralph Rice. "Second Lumbar Lesion" and "Heart Disease."

State Society Auxiliary

The officers are: President, Mrs. L. D. Chesemore, Paris; president-elect, Mrs. P. G. Smith, Pikeville; vice president, Mrs. L. J. Phillips, Chattanooga; secretary-treasurer, Mrs. J. C. Emmons, Chapel Hill.

Committee chairmen are: Membership, Mrs. Smith; program, Mrs. Phillips; parliamentarian, Mrs. Stanley Pettit, Cleveland; ways and means, Mrs. R. D. Shepherd, Dunlap; hospitals and clinics, Mrs. L. D. Elliston, Covington; student loan, Mrs. J. A. Moore, Dyersburg; scholarship, Mrs. M. E. Coy, Jackson; progress, Mrs. J. M. Moore, Jr., Trenton; public relations, Mrs. H. P. Bynum, Memphis; historian, Mrs. H. F. Bower, Union City.

TEXAS

Dallas County

At the meeting October 13, Phil R. Russell, Fort Worth, spoke on "Organization Work."

South Plains

The officers are: President, E. S. Davidson; vice president, Horace A. Emery; secretary-treasurer, Henry A. Spivey, all of Lubbock.

The committee chairmen are: Membership, Dr. Spivey; ethics, Dr. Davidson; hospitals, G. G. Porter; clinics, Richard M. Mayer; statistics, W. D. Danks, Jr.; convention program, Dr. Emery; convention arrangements, E. D. Thompson, all of Lubbock; legislation, Gale Seigler, Olton; vocational guidance, Joe P. Alexander, Spur; public health, Samuel H. Hitch; industrial and institutional service, R. Z. Abell, Jr.; public relations, Edward M. Whitacre, all of Lubbock.

Tarrant County

At the October meeting Dr. E. M. Jellinek, Fort Worth, director of the Yale Institute for Alcohol Studies in the Southwest at Texas Christian University, explained the steps through which an individual may progress to alcoholism.

The speaker at the September meeting was Catherine Kenney Carlton, Fort Worth, who spoke on socialized medicine in England as observed during a recent visit.

Southwest

L. C. Edwards was the speaker at the September meeting in Houston.

District Three

Patrick D. Philben, Dallas, presented "Treatment of Obesity in Children" at the September 18 meeting in Jacksonville, after which Robert E. Morgan spoke on "Athletic Injuries." Lige C. Edwards discussed the problems and progress of the state association.

District Four

A meeting was scheduled for October 16 at which R. E. Hubbard, Midland, was to present "Intervertebral Disk"; Norman B. Leopold, "X-ray Studies," and Edwin Gettins, "Heart Diseases." The latter two are from Odessa.

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WASHINGTON

State Society

According to an advance notice the seminar on December 3 in Seattle scheduled the following papers: "Clinical Diagnosis of Herniated Nucleus Pulposus," H. V. Hoover, Tacoma; "Roentgenological Diagnosis of Herniated Nucleus Pulposus," Charles L. Wilson, Yakima; "Postural Correction and What You May Expect in Improved Physiology," Einer Peterson, Tacoma; "Diagnosis, Significance and Treatment of Shoulder Articular Pathology," P. C. Wilde, Seahurst; "Diagnosis and Treatment of Coronary Thrombosis," Arthur Cunningham, Seattle; "Significance of the Osteopathic Articular Lesion and Its Treatment in the Handling of Cardiac Cases," Harry L. Davis, Walla Walla; "Causes and Treatment of Pruritis Ani," James R. Honnold, Seattle; summary of general medicine, Richard Sayre Koch, Olympia, "Highlights on the Etiology and Treatment of Headaches," W. J. Siemens; a modern interpretation of low-back problems and remedial manipulative action, J. Lowell Kinslow and A. J. Walker; "Office Procedures in PVD and Appendicular Manipulation," Eugene D. LaCroix, and "Manipulation in Correction of Pelvic Problems," Linda B. Iddins, all of Seattle.

WISCONSIN

Madison District

At the meeting in Hustisford on October 20 the speakers were Dr. Esther De Weerdt of the Wisconsin Society for Mental Health and Dr. Ole N. De Weerdt, consulting psychologist. The latter spoke on "Pointers in Handling Children."

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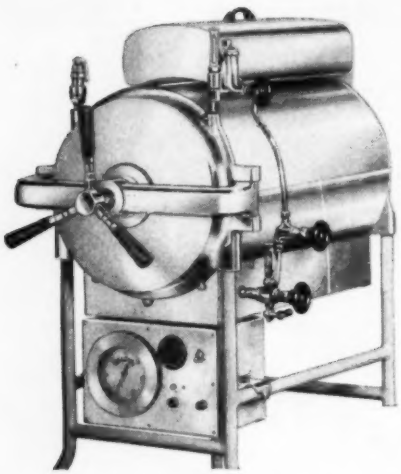

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SPECIAL AND SPECIALTY GROUPS

AMERICAN COLLEGE OF OSTEOPATHIC INTERNISTS

A list of officers was published in the November JOURNAL. It should have included the name of the vice president, Charles M. Worrell, Palmyra, Pa. We regret the omission.

AMERICAN COLLEGE OF OSTEOPATHIC PEDIATRICIANS

Region I

The officers are: President, Leo C. Wagner, Philadelphia; first vice president, F. Munro Purse, Narberth, Pa.; second vice president, Arnold Melnick, and secretary-treasurer, Otto M. Kurschner, the latter two from Philadelphia.

At the October 30 meeting in Philadelphia a symposium on kidney diseases was presented with Blanche Allen, Bryn Mawr, speaking on "The Anatomy of the Kidney"; Otto M. Kurschner, "The Physiology of the Kidney"; Mr. Kenneth L. Senior, "The Chemistry of the Kidney"; Leo C. Wagner, "Nephrosis"; F. Munro Purse, "Wilm's Tumor", and Paul T. Lloyd, Philadelphia, "X-ray Diagnosis and Treatment of Wilm's Tumor."

AMERICAN COLLEGE OF OSTEOPATHIC SURGEONS

The officers are: President, J. Gordon Hatfield, Los Angeles; president-elect, Charles Ballinger, Toledo, Ohio; vice president, J. Willoughby Howe, Hollywood, Calif., and secretary-treasurer, Orel F. Martin, (re-elected), Coral Gables, Fla. The board of governors consists of William E. Waldo, Seattle; Sam F. Sparks, Dallas, Tex., and Walter F. Rossman, Grove City, Pa.

AMERICAN OSTEOPATHIC COLLEGE OF RADIOLOGY

The officers are: President, Raymond P. Keesecker, Cleveland; president-elect, D. W. Hendrickson, Wichita, Kans.; vice president, C. A. Tedrick, Denver, and secretary-treasurer, H. Miles Snyder, Detroit. Members of the executive committee are Edward P. Small, Detroit; Burwell S. Keyes, Los Angeles, and J. Armande Porias, Newark, N. J.

AMERICAN OSTEOPATHIC HOSPITAL ASSOCIATION

The officers are: President, Mr. Edward C. Barron, Detroit; vice president, Mr. Philip Vicari, Grand Rapids, Mich., and secretary-treasurer, Mr. William S. Konold (re-elected), Columbus, Ohio. The trustees elected at the October meeting are: E. L. Pierce, Newton, Mass.; Kenneth B. Tindall, Orlando, Fla.; Mrs. Alixe P. Nuzum (re-elected), Des Moines, Iowa; Merle Griffin, Corpus Christi, Tex., and Mr. A. C. Cavanaugh, Glendale, Calif.

ILLINOIS OSTEOPATHIC SOCIETY OF RADIOLOGY

On the program of the October 23 meeting in Bloomington were scheduled an illustrated lecture, "Common Pitfalls in the Diagnosis of Fractures," to be presented by William E. Clouse, Chicago, and a special discussion period conducted by Jack H. Grant and John Poehner, both of Chicago.

MICHIGAN OSTEOPATHIC SOCIETY OF OBSTETRICIANS AND GYNECOLOGISTS

Papers presented in Lansing September 25 were "Infertility," Roy Bubeck, Grand Rapids; "Radiological Aspects of Gynecological Diagnosis," P. M. Wells, Lansing; "Prenatal and Postpartum Pathology of the Rectum," H. L. Shade, Lansing; "Value of Manipulation in Obstetrics and Gynecology," L. M. Jarrett, Lansing, and "Toxemias," a panel discussion conducted by J. G. Matthews, Jr., Highland Park.

OKLAHOMA OSTEOPATHIC RADIOLOGICAL SOCIETY

C. A. Tedrick, Denver, was scheduled to be the guest speaker at the meeting planned for September 15 in Oklahoma City. The program was to include "X-ray Studies of Renal Pathology," "Roentgen Therapy in Nonmalignant Cases," and "Pulmonary Tuberculosis."

OSTEOPATHIC ACADEMY OF ORTHOPEDISTS

The officers are: President, Troy L. McHenry, Los Angeles; vice president, Harry Schaffer, secretary-treasurer, J. Paul Leonard, the latter two of Detroit; trustee, Wallace M. Pearson, Kirksville.

OSTEOPATHIC COLLEGE OF OPHTHALMOLOGY AND OTORHINOLARYNGOLOGY

The officers are: President, R. S. Licklider, Columbus, Ohio; vice president, Edward Davidson, Los Angeles, and secretary-treasurer, L. S. Larimore, Kansas City, Mo.

PENNSYLVANIA OSTEOPATHIC SURGICAL SOCIETY

The officers are: President, Walter F. Rossman (re-elected), Grove City; vice president, J. E. Leuzinger (re-elected), Philadelphia, and secretary-treasurer, Michael Blackstone (re-elected), Allentown. The trustees are: H. Willard Sterrett, Sr., and Carlton Street, both of Philadelphia, and Ralph P. Baker, York.

PUGET SOUND ACADEMY OF APPLIED OSTEOPATHY

The program for the meeting scheduled for September 21 in Seattle, according to an advance announcement, was to include "Sidebending Rotation Lesions," Mary Alice Hoover, and "Diagnosis and Technic," H. V. Hoover, both of Tacoma; discussion of an article by Albert D. Guy in Year Book, Part III, by Leanna Terry and Part IV by L. L. Herr, both of Seattle; "Cervical Technic," M. D. Young, Seattle, and "Convention Highlights," Richard Sayre Koch, Olympia.

ROCKY MOUNTAIN OSTEOPATHIC CONFERENCE

According to an advance announcement the program for the Rocky Mountain Osteopathic Conference, held November 11-13, in Colorado Springs was to include the following: "Cranial Osteopathy—the Premise and Development," "Cranial Osteopathy, Its Place in Practice," and "Miscellaneous Technics," Paul E. Kimberly, Des Moines, Iowa; "Low-Back Problem, Diagnosis and Treatment," "Fractures for the General Practitioner," and "Growth Deficiencies in Children, Including Congenital Dislocations of the Hip," Leonard C. Nagel, Kansas City, Mo.; "The Management of Anemias," "Differential Diagnosis of Jaundice," and "Management of Edema," Ralph F. Lindberg, Detroit; "Differential Diagnosis of the More Common Chest Pathologies," "Diagnosis of Pathologies of the Upper Abdomen Which May Simulate Biliary Disease," and "The Differential Diagnosis of the Destructive Lesions of the Bone," C. J. Karibo, Detroit; "History Taking and Symptom Analysis" and "Plans of the Profession," H. Dale Pearson, Erie, Pa.

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*Hueper, W. C.: Medical Clinics of North America, May 1949.

State and National Boards

ARIZONA

Basic science examinations March 21 in Tucson. Applications must be filed 2 weeks prior to examination date. Address Francis A. Roy, Ph. D., secretary, Arizona Basic Science Board, University of Arizona, Tucson.

COLORADO

Professional examinations January 3. Address Walter W. King, M. D., secretary, State Board of Medical Examiners, 227 16th Street, Denver 2.

Basic science examinations, March 1, 2 in Denver. Applications must be filed before February 15. Address Esther B. Starks, D. O., secretary, Colorado Basic Science Board, 1459 Ogden Street, Denver.

CONNECTICUT

Basic science examinations February 11 in New Haven. Applications must be filed no later than 2 weeks before examination. Address Miss M. G. Reynolds, executive assistant, State Board of Healing Arts, 110 Whitney Avenue, New Haven 10.

DELAWARE

Examinations January 10-12. Address Joseph Daniel, M. D., secretary, Delaware State Board of Medical Examiners, 229 S. State Street, Dover.

HAWAII

Examinations January 11. Address Mabel A. Runyan, D. O., secretary, Board of Osteopathic Examiners, 2333 C. Kalakaua Avenue, Honolulu 30.

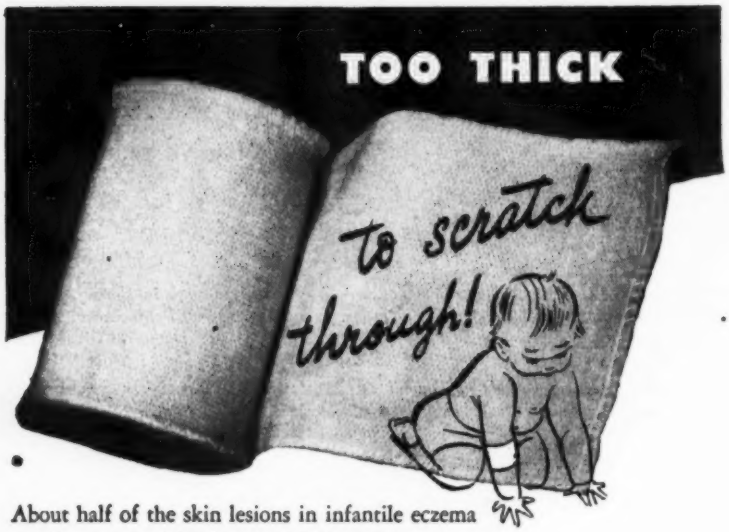
IOWA

Professional examinations February 2, 3, State House, Des Moines. Applications must be filed by January 18. Address W. S. Edmund, D.O., Secretary, State Board of Osteopathic Examiners, 200 Walnut Bldg., Des Moines 9.

Basic science examinations, January 10 in Des Moines. Applications may be received up to the time of examinations. Address Ben H. Peterson, Ph. D., secretary, Iowa Board of Basic Science Examiners, Coe College, Cedar Rapids.

ILLINOIS

Examinations January 10-12 in Chicago. Address Mr. Charles F. Kervin, Superintendent of Registration, Department of Registration and Education, State House, Springfield.



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*Hill, L. W.: Infantile Eczema. J.A.M.A. 140:139. 141 (May 14) 1949.

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KANSAS

Examinations February 16-18 in Topeka. Applications must be filed 30 days before examination. Address Forrest H. Kendall, D. O., secretary, State Board of Osteopathic Examination and Registration, 420½ Penn, Holton.

LOUISIANA

Henry Tete, New Orleans, was appointed to the Board of Osteopathy to succeed W. Luther Stewart, Alexandria, whose term expired.

Officers of the Board are: President, R. H. Walton, New Orleans; secretary, V. L. Wharton, and treasurer, Walter Colquitt, Shreveport.

MASSACHUSETTS

Examinations March 14. Applications should be filed 2 weeks before examination. Address George Schadt, M. D., secretary, Board of Registration in Medicine, State House, Boston 33.

MICHIGAN

Basic science examinations January 13, 14 in Ann Arbor and Detroit. Application must be filed January 1. Address Miss Eloise LeBeau, secretary, State Board of Examiners in the Basic Sciences, 101 N. Walnut Street, Lansing.

MINNESOTA

Basic science examinations January 3, 4, in Minneapolis. Applications must be filed 1 week before examination. Address Raymond Bieter, M. D., secretary-treasurer, State Board of Examiners, 126 Millard Hall, University of Minnesota, Minneapolis 14.

Professional examinations, March 14. Address George F. Miller, D. O., secretary, Board of Osteopathic Examiners, 601 Dayton Ave., St. Paul 2.

MISSOURI

Examinations January 12-14, at the Kansas City College of Osteopathy and Surgery and the Kirksville College of Osteopathy and Surgery. Applications must be filed 10 days before date of examination. Address F. C. Hopkins, D.O., secretary, 203 S. 6th, Hannibal.

MONTANA

Examinations March 7. Address Asa Willard, D. O., secretary, Board of Osteopathic Examiners, Wilma Bldg., Missoula.

W. C. Dawes, Bozeman, recently was reappointed a member of the Board.

NEBRASKA

Basic science examinations, January 10, 11, University College of Medicine, Omaha. Applications must be filed 15 days prior to examination. Address Mr. Oscar F. Humble, director, Bureau of Examining Boards, State House, Lincoln.

NEVADA

Examinations January 10. Address Walter J. Walker, D. O., secretary, Board of Osteopathic Examiners, 210 W. Second Street, Reno.

NEW HAMPSHIRE

Examinations March 9 in Concord. Address John S. Wheeler, M. D., secretary, Board of Registration in Medicine, State House, Concord.

NEW MEXICO

Basic science examinations February 5. Address Miss Margaret Kilkenny, Assistant Secretary of State, c/o Secretary of State's Office, Sante Fe.

NEW YORK

Examinations January 31-February 3 in Albany, Buffalo, New York, and Syracuse. Address Jacob L. Lochner, Jr., M. D., secretary, State Board of Medical Examiners, 23 S. Pearl Street, Albany.

NORTH DAKOTA

Examinations January 3. Address M. M. Kemble, D. O., secretary, State Board of Osteopathic Examiners, 6-10 Kresge Block, Minot.

OREGON

Basic science examinations March 4 in the Lincoln High School, Portland. Address Charles D. Byrne, Ph. D., secretary, State Board of Higher Education, Eugene.

Professional examinations January 5-7. Applications should be filed on or before December 16. Reciprocity or endorsement applications may be submitted not later than December 30 for consideration at the Board meeting scheduled for January 20, 21. In both instances, address Howard I. Bobbett, executive secretary, State Board of Medical Examiners, 608 Failing Building, Portland.

PUERTO RICO

Examinations March 7 in San Juan. Applications must be filed 3 months before examination. Address Oscar G. Costa Mandry, M. D., secretary, Board of Medical Examiners, Box 3854, Santurce.

RHODE ISLAND

Professional examinations January 5. Address Mr. Thomas B. Casey, Administrator of Professional Regulations, State Office Building, Providence.

Basic science examinations in February. Applications must be filed by February 1. Applicants are eligible any time subsequent to second completed year of professional training. Address Rev. Father Nicholas H. Serror, secretary, Board of Examiners in Basic Sciences, Providence College, Providence.

VERMONT

Examinations January 25 and 26 in the State House at Montpelier. Address Charles D. Beale, D.O., secretary, Board of Osteopathic Examination and Registration, Mead Building, Rutland.

WASHINGTON

Basic science examinations in January in Seattle. Address Mr. George Starlund, acting director, Department of Licenses, Olympia.

WEST VIRGINIA

Examinations January 25, 26 in Charleston. Applications must be filed 10 days prior to examination. Address T. H. Lacey, D.O., secretary-treasurer, Board of Osteopathy, 711½ Market Street, Parkersburg.

WYOMING

Examinations in February in Cheyenne. Address G. M. Anderson, secretary, State Board of Medical Examiners, State Capitol, Cheyenne.

REREGISTRATION OF OSTEOPATHIC LICENSES

During December—District of Columbia, $2.00. Address G. C. Ruhland, M.D., Commissioner of Licensure, Room 4130, Municipal Bldg., Washington, D. C.

January—Alberta. No reregistration. Pay $10.00 a year membership in College of Physicians and Surgeons, Alberta.

During January — Connecticut, $2.00. Address H. W. Gorham, D.O., secretary, State Board of Osteopathic Examination and Registration, 520 West Ave., Norwalk.

During January — Minnesota, $2.00. Address George F. Miller, D.O., secretary, State Board of Osteopathic Examiners, 601 Dayton Ave., St. Paul 2.

During January—Wisconsin, not more than $3.00. Address C. A. Dawson, M.D., secretary, State Board of Medical Examiners, River Falls.

January 1—Arizona, not more than $12.00. Address A. B. Stoner, D.O., secretary, State Board of Osteopathic Examiners, 422 Security Bldg., Phoenix.

January 1—California, $20.00 for residents and non-residents. Address Glen D. Cayler, D.O., secretary, Board of Osteopathic Examiners, 301 Forum Bldg., Sacramento.

January 1—Florida, $5.00. Address Richard S. Berry, D.O., secretary, State Board of Osteopathic Medical Examiners, 617-18 Times Bldg., St. Petersburg 5.

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January 1—Manitoba, $5.00. Address W. Kurth, D.O., secretary, Board of Osteopathic Physicians, 248 Moorgate Blvd., Deer Lodge, Winnipeg.

January 1—New York, $2.00. Address Jacob L. Lochner, Jr., M.D., secretary, State Board of Medical Examiners, 23 South Pearl Street, Albany 7.

January 1—Ontario, $10.00. Address Mr. John C. Beer, secretary, Board of Regents; Drugless Practitioners Act, Room 615, 57 Bloor St., W., Toronto 5.

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January 1—Texas, $2.00. Address M. H. Crabb, M.D., secretary, State Board of Medical Examiners, Medical Arts Bldg., Fort Worth.

January 1—Utah, $3.00. Address Mr. Frank E. Lees, assistant director, Department of Registration, 324 State Capitol, Salt Lake City.

January 31—British Columbia, amount of fee set at Annual Meeting of College of Physicians and Surgeons of British Columbia, (1946, $28.00). Address A. J. MacLachlan, M.D., registrar, Council College of Physicians and Surgeons of British Columbia, 203 Medical Dental Bldg., Vancouver.

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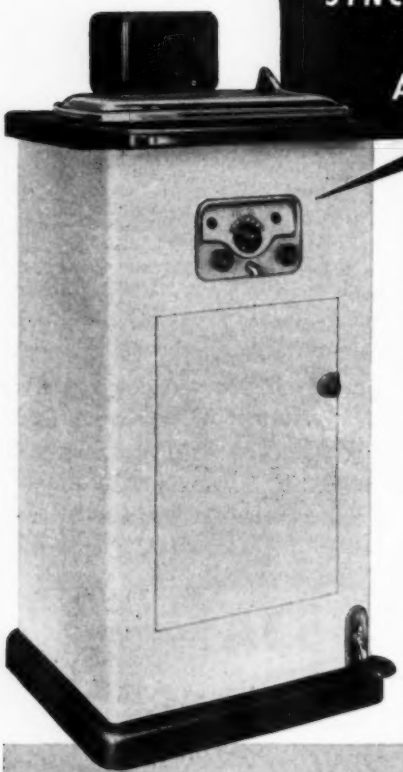

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The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary, and the completed application blank together with a passport photograph and check for the part or parts to be taken, must be in the Secretary's office by the November 15, or April 15 preceding examination. Part III of the examination will be given in specific locations at the discretion of the Board for the convenience of the applicant.

Examinations in Part I consist of anatomy, physiology, pathology, chemistry, and bacteriology. Part II consists of examination in mental diseases, surgery, obstetrics and gynecology, pediatrics, public health, osteopathic theory and practice. Part III is an oral examination.

Address John E. Rogers, D.O., secretary, 16 Mount Vernon Street, Oshkosh, Wisconsin.

Extracts

HEALTH IS EVERYBODY'S BUSINESS

*By Mayhew Derryberry, Ph.D.**

Not so long ago, one of the outstanding leaders of public health said, "You know I used to think that the main purpose for bringing the community into the program was to get support for the activities we wanted to carry out." This statement typifies the public health thinking of a quarter of a century ago. Professional workers carefully studied the situation, developed a program which they considered good for the people, and then tried to obtain their support. Public health leaders were afraid to give citizens too much, if any, voice in the development of the program for fear they might want to do something the experts didn't think right. Frequently, such statements as the following were made: "Laymen get too enthusiastic and move too fast." "They are uninformed and demand things we can't do."

So long as the professional health workers could provide mass disease control through some activity of their own, like providing a clean and safe milk and water supply, or adequate sewage disposal, such an attitude did not detract from public health progress.

But today, the problems are changed, and the interests of citizens are becoming more intimately concerned with health. How to capitalize on this interest and bring about constructive group thinking and planning by the citizens is a major task for public health workers.

The problem has at least two important aspects:

1. How to involve large groups of people with varying backgrounds, interests and experience in working harmoniously together.

2. How to change the attitude of professional public health workers so that they will aid group thinking and planning by citizens for improvement of their own health.

Some suggestions for working out these two problems may be gleaned from the experimental programs conducted by social psychologists, adult educators, industrial relations officers, and workers in community organization and social group work.

1. *The first and most important step in group planning by citizens is that the problem to be worked on should be selected by them, and be one that a majority of the members of the group feel is important*

Too often in the past the problem has been one selected by professional workers. But are the people always interested in the problems proposed by the public health profession? It is difficult to interest an individual in having a careful periodic medical examination for the protection of his health in the future

*Chief, Division of Public Health Education, Public Health Service. This paper was read before the Annual Meeting of the Health Council of Greater New York, Inc., New York City, April 1949. Reprinted from *Public Health Reports,* October 14, 1949.

when he has a throbbing toothache. Groups frequently can't be interested in preschool health programs when the filth around them is the problem that is disturbing them most. The immediate problem selected must be the one which the people recognize as important.

Sometimes the problem has been determined by a superficial annoyance of one citizen who is determined to dominate and have his problem solved, regardless of group concerns. This is not an easy situation to handle, but as groups become more skilled in working together, they will be able to avoid the pitfall of satisfying only a domineering citizen.

The most usual method of problem selection begins with a survey, sometimes conducted by experts, but preferably conducted by the citizens themselves. All too often, however, the completion of the survey, making of recommendations, and printing of the report (to adorn library shelves) are accepted as the solution of the problem. A recommendation is made that somebody else do something and through that method those who should take action wash their hands of any further responsibility. If surveys are to be used, the people should make the survey, or at least frame the recommendations for the action they will take.

The social psychologists suggest a problem census as the method for selecting a problem on which to work, that is, listing all the problems with which the various group members are concerned. Professional workers are always afraid that the laymen are not aware of the important problems. Actually in any such compilation made by interested citizens, the entire gamut of health problems will always be covered. From the listed problems priorities can be established through group decision.

2. *The goal to be achieved with reference to any problem must be realistic, and not visionary and entirely idealistic*

In determining a realistic goal, it is necessary to appraise carefully the resources available to the group. Individuals and organizations must be given the opportunity to define their own level of participation. How many of us have seen Mr. or Mrs. Fix-it who alienated many potential workers on a project by saying, "I have it all worked out. Mrs. Jones, you do this; Mr. Smith, your organization can do this." The hostile reactions to such a person need not be described.

(Continued in next issue)

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(1) Shute, E. V.; Vogelsang, A. B.; Shelton, F. R. and Shute, W. E.: The Influence of Vitamin E on Vascular Disease, Surg., Gynec. & Obst. 86:1, 1948

CHANGE OF ADDRESS AND NEW LOCATIONS

Ackley, Horace M., from 208 E. Wisconsin Ave., to 4148 Plankinton Bldg., 161 W. Wisconsin Ave., Milwaukee 3, Wis.
Adland, Bernard, from Inglewood, Calif., to 10228 McNerney Ave., South Gate, Calif.
Aelmore, Augustus Charles, COPS '49, Bucklin, Kansas
Aiken, John W., from 141 Court St., to 122 S. California St., Socorro, N. Mex.
Aiken, Louisa V., from 141 Court St., to 122 S. California St., Socorro, N. Mex.
Allan, Robert E., from Readlyn, Iowa, to Arlington, Iowa
Alshan, Norman, CCO '49; 4756 S. Drexel Blvd., Chicago 15, Ill.
Anderson, John S. from Tremont Bldg., to 117 S. Main St., River Falls, Wis.
Anderson, Yolanda M., from 13750 Dexter Blvd., to 4244 Livernois Ave., Detroit 10, Mich.
Aveni, Domenic J., from 2010 E. 102nd St., to 13240 Euclid Ave., Cleveland 12, Ohio
Bagnall, David J., from Everett, Wash., to Waldo General Hospital, 15th Ave., N.E., & E. 85th St., Seattle 5, Wash.
Baker, Lory, KC '49; 419 Brooklyn Ave., Kansas City 1, Mo.
Baldwin, Earl Z., Jr., KC '49; 1615 Admiral Boulevard, Kansas City 6, Missouri
Ballew, W. H., from 801 W. Tenth St., to 3003 S. Harrison St., Amarillo, Texas
Bartleti, Robert, from Burlington, Vt., to Callahan Clinic, Steele, Mo.
Bell, John, from Cleveland, Ohio, to 7005 Miller Ave., Detroit 11, Mich.
Benedict, Helen E., PCO '49; 1200 Holland Street, Crum Lynne, Pennsylvania
Bonham, Lillian C., from Savannah, Ga., to 731 Main St., South Portland 7, Maine
Bortle, Donald T., from Portland, Maine, to Osteo. Hosp. of Rhode Island, 1763 Broad St., Edgewood, Cranston 5, R. I.
Bostick, Randall G., from Mount Clemens, Mich. to Capac, Mich.
Brady, L. P., from Lake Worth, Florida, to Krueger Bldg., Stuart, Fla.
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Brenner, Henry, COPS '49; 4081B Hillcrest Dr., Los Angeles 43, Calif.
Briner, Donald H., from 129 N. Diamond St., to E. Market St., Mercer, Pa.
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Brown, Edward S., from 5734 Spruce St., to 2008 Chestnut St., Philadelphia 3, Pa.
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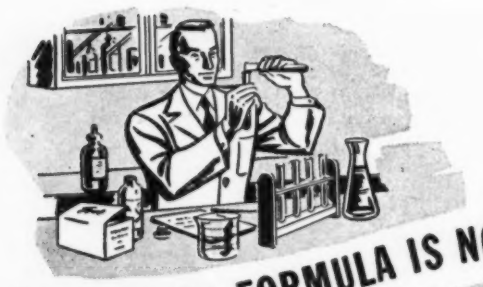
Bumstead, Arthur P., from 903 N. Monroe St., to 611 Fifth Ave., Bay City, Mich.
Buonomo, Louis J., from Los Angeles, Calif., to 216 Fifth St., Colusa, Calif.
Cable, Guy W., from Green City, Mo., to Wardell, Mo.
Campbell, John P., from 3845 Penobscot Bldg., to 1916 Dime Bldg., Detroit 26, Mich.
Carlson, Ernest J., from 2047 S. Broadway, to 2041 S. Broadway, Denver 10, Colo.
Chadwell, Paul W., from 2813 S. Sixth Ave., to San Clemente Clinic, 3927 E. Broadway, Tucson, Arizona
Christensen, Naomi, from 1118 Belmont Road, to 1241 Cherry St., Grand Forks, N. Dak.
Clinch, Arthur H., from Grandview, Texas, to Northside Clinic, 1901 N. E. 28th St., Fort Worth 6, Texas
Coan, Paul J., from Cleveland, Ohio, to Des Moines Still College Osteopathic Hospital, 725 Sixth Ave., Des Moines 9, Iowa



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Coles, J. Kenneth, from Kansas City, Kansas, to 17 E. Tenth St., Kansas City 6, Mo.

DeVaney, Willis F., from Long Beach, Calif., to 2228 S. San Gabriel Blvd., San Gabriel, Calif.

DeShong, Dorland, from Kansas City, Mo., to Main & Swen St., Box 37, Hooker, Okla.

Devereaux, Albert K., from 7115 Eastern Ave., to 6117 E. Gage, Bell Gardens, Calif.

DeYonker, John F., Jr., from 1106 Francis Palms Bldg., to 13850 E. Eight Mile Road, Detroit 5, Mich.

Doe, Stanley W., PCO '49; West Side Osteopathic Hospital, 1253 West Market Street, York, Pennsylvania

Draper, George W., Jr., from 372 Central Ave., to 233 Central Ave., Dover, N. H.

Dubinett, Nathan J., from Brooklyn, N. Y., to 124½ N. Kenmore Ave., Los Angeles 4, Calif.

Dunn, Floyd E., from Macon, Mo., to Osteopathic Hospital of Kansas City, 926 E. 11th St., Kansas City 6, Mo.

Dupuy, Victor G., from National City, Calif., to 820 24th St., Sacramento 16, Calif.

Eagon, George W., from Portland, Ore., to 1550 Lincoln St., Denver 5, Colo.

Earhart, Ralph, from Keytesville, Mo., to Mountainair, N. Mex.

Eckert, R. W., KC '49; Monte Sano Hospital and Sanitarium, 2834 Glendale Blvd., Los Angeles 26, Calif.

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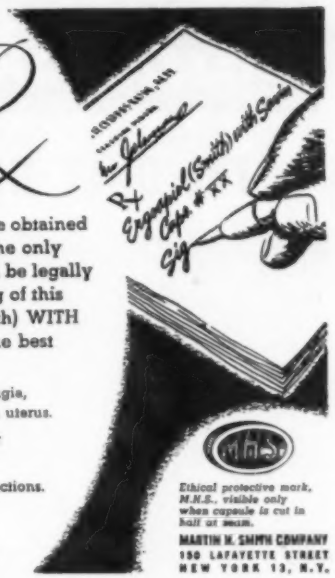

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Starr, Charles E., DMS '49; Los Angeles County Osteopathic Hospital, 1100 N. Mission Rd., Los Angeles 33, Calif.
Stiles, Dwight A., from Dayton, Ohio, to 5309 N. Seventh St., Phoenix, Ariz.
Sultan, Henry H., from 1034½ S. Fairfax Ave., to 1029 S. Fairfax Ave., Los Angeles 35, Calif.
Sutter, Robert F., from Kirksville, Mo., to Licking, Mo.
Swiencki, Bernard, PCO '49; Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.
Tardieu, B., from Oakland, Calif., to Box 258, Moscow, Idaho
Taylor, Samuel E., from 102-04 W. McDowell Rd., to 5305 N. Seventh St., Phoenix, Ariz.

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Thomas, Price E., from Ashland, Ore., to Kirksville College of Osteo. & Surgery, Kirksville, Mo.
Thompson, E. D., from 2121 Broadway, to 1502 Main St., Lubbock, Texas
Toland, Floyd E., from Augusta, Ill., to Fitch Osteopathic Clinic, 111 N. Dean St., Bushnell, Ill.
Tomayko, William A., KC '49; Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.
Tracy, William K., from 582 W. Market St., to 55 S. Richland Ave., York, Pa.
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Wallner, Leonard, PCO '49; 2739 Germantown Ave., Philadelphia 33, Pa.
Walsh, J. Craig, from 4173 Ridge Ave., to 4163 Ridge Ave., Philadelphia 29, Pa.
Warden, Carl E., from 201-03 Calcasieu Bldg., to 201-02 Noble Bldg., Box 616, Lake Charles, La.
Wheelan, Mildred Weygandt, from 521 W. Fourth St., to 2330 Connor St., Joplin, Mo. (change of name from Mildred G. Weygandt)
Whiteside, Sunora L., from 502 Jackson Bldg., to 201-21st Ave., N., Nashville 5, Tenn.
Witthohn, Arthur H., from Bangor, Maine, to Grand Rapids Osteopathic Hospital, 1225 Lake Drive, S.E., Grand Rapids 6, Mich.
Witthohn, Edward, from Pearl River, N.Y., to 214 Clinton St., Watertown, N.Y.
Wojahn, Albert H., from 1100 E. Windsor Road, to 1412 W. Glenoaks Blvd., Glendale 1, Calif.
Woodley, Loren G., from Catasauqua, Pa., to 539 Seem St., Emmaus, Pa.
Woods, Ronald K., from 603 E. 12th St., to 702 Equitable Bldg., Des Moines 9, Iowa
Wynn, Paul V., from 206 N. Tenth St., to 3602 W. Central Ave., Albuquerque, N. Mex.
Zarowitz, Daniel G., PCO '49; 5120 Corona Ave., Maywood, Calif.
Zeigler, B. W., from Kirksville, Mo., to 582 W. Market St., York, Pa.

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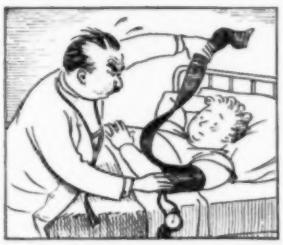

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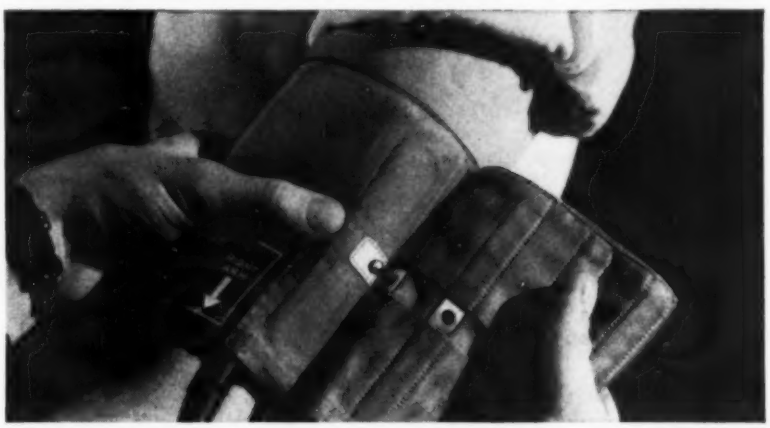

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ATLAS OF SURGICAL OPERATIONS. By Elliott C. Cutler, Late Moseley Professor of Surgery, Harvard University, and Chief Surgeon, Peter Bent Brigham Hospital; formerly, Brigadier General, U. S. Army Medical Corps, Chief Consultant in Surgery, European Theater of Operations; formerly, Professor of Surgery, Western Reserve University; and Director of Surgery, Lakeside Hospital, and Robert M. Zollinger, Professor and Chairman of the Department of Surgery, Ohio State University College of Medicine, and Chief of the Surgical Service, University Hospitals, Ohio State University; formerly, Assistant Professor of Surgery, Harvard University, and Surgeon at the Peter Bent Brigham Hospital; formerly Colonel, U. S. Army Medical Corps, Senior Consultant in Surgery, European Theater of Operations. Ed. 2. Cloth. Pp. 226, with illustrations. Price $9.00 The Macmillan Company, 60 Fifth Avenue, New York, 1949.

A TEXTBOOK OF PHYSIOLOGY. Originally by William H. Howell, M.D. Edited by John F. Fulton, M.D., Sterling Professor of Physiology, Yale University School of Medicine. Ed. 16. Cloth. Pp. 1258, with illustrations. Price $10.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1949.

CLINICAL DIAGNOSIS BY LABORATORY EXAMINATIONS. By John A. Kolmer, M.S., M.D., Dr.P.H., Sc.D., LL.D., L.H.D., F.A.C.P., Professor of Medicine in the School of Medicine and the School of Dentistry of Temple University; Director of the Research Institute of Cutaneous Medicine; Formerly Professor of Pathology and Bacteriology in the Graduate School of Medicine of the University of Pennsylvania. Ed. 2. Cloth. Pp. 1212, with illustrations. Price $12.00. Appleton-Century-Crofts, Inc., 35 West 32nd Street, New York 1, 1949.

VISION—Its Development in Infant and Child. By Arnold Gesell, M.D., Frances L. Ilg, M.D., and Glenna E. Bullis. Cloth. Pp. 330, with illustrations. Price $6.50. Paul B. Hoeber, Inc., 49 E. 33rd St., New York City, 1949.

ACUTE LARYNGOTRACHEOBRONCHITIS. By A. Harry Neffson, M.D. Cloth. Pp. 198, with illustrations. Price $5.00. Grune & Stratton, Inc., 381 Fourth Avenue, New York 16, 1949.

MALARIA. The Biography of a Killer. By Leon J. Warshaw, M.D. Cloth. Pp. 348. Price $3.75. Rinehart & Company, 232 Madison Avenue, New York 16, 1949.

A TEXTBOOK OF SURGERY by American Authors. Edited by Frederick Christopher, B.S., M.D., F.A.C.S., Professor of Surgery, Northwestern University Medical School; Chief Surgeon, Evanston (Illinois) Hospital. Ed. 5. Cloth. Pp. 1550, with illustrations. Price $13.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1949.

BONE AND JOINT RADIOLOGY. By Emerik Markovits, M.D., Formerly, Scientific Collaborator of the Central Radiologic Institute of the General Hospital (Holzknecht-Institute), Vienna; Head of the Radiologic Department of Elizabeth Hospital of the City of Budapest; Post-graduate Lecturer at the Central Radiologic Institute of the University of Budapest; Radiologist of the Steiner Cancer Clinic, Atlanta, Ga. Cloth. Pp. 446, with illustrations. Price $20.00. The Macmillan Company, 60 Fifth Avenue, New York, 1949.

CLINICAL AUDIOLOGY. By Maurice Saltzman, M.D., Assistant Professor of Otorhinology, Temple University School of Medicine; Associate Otolaryngologist, Mount Sinai Hospital, Philadelphia; Diplomate, American Board of Otolaryngology. Cloth. Pp. 196, with illustrations. Price $5.00. Grune & Stratton, Inc., 381 Fourth Avenue, New York 16, 1949.

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MAY'S MANUAL OF THE DISEASES OF THE EYE. Edited by Charles A. Perera, M.D., Assistant Clinical Professor, College of Physicians and Surgeons, Columbia University, New York; Associate Attending Ophthalmologist, Presbyterian Hospital, New York. Ed. 20, revised. Cloth. Pp. 512, with illustrations. Price $5.00. The Williams & Wilkins Company, Mt. Royal & Guilford Avenue, Baltimore, 1949.

CHILD HEALTH SERVICES AND PEDIATRIC EDUCATION. Report of the Committee for the Study of Child Health Services, The American Academy of Pediatrics, with the cooperation of the United States Public Health Service and the United States Children's Bureau. Cloth. Pp. 270, with illustrations. Price $3.50. The Commonwealth Fund, 41 E. 57th St., New York, 1949.

OPERATIVE TECHNIC IN SPECIALTY SURGERY. Edited by Warren H. Cole, M.D., F.A.C.S., Professor and Head of the Department of Surgery, University of Illinois College of Medicine; Director of Surgical Service, Illinois Research and Educational Hospitals, Chicago. Cloth. Pp. 730, with illustrations. Price $14.00. Appleton-Century-Crofts, Inc., 35 West 32nd Street, New York, 1949.

ELECTROTHERAPY AND LIGHT THERAPY. By Richard Kovacs, M.D., Professor of Physical Medicine, New York Polyclinic Medical School and Hospital; Attending Physical Therapist, Manhattan State, Harlem Valley State and Columbus Hospitals; Visiting Physical Therapist, New York City Department of Correction Hospitals; Consulting Physical Thefapist, Mary Immaculate Hospital, Jamaica, N. Y., St. Charles Hospital, Port Jefferson, L. I., Alexian Brothers Hospital, Elizabeth, N. J.; Area Consultant, Physical Medicine Rehabilitation, Veterans Administration; Consultant in Physical Medicine, Office of the Surgeon General, Army Department. Ed. 6, thoroughly revised. Cloth. Pp. 740, with illustrations. Price $10.00. Lea & Febiger, Washington Square, Philadelphia, 1949.

"CIRCULATION," OFFICIAL ORGAN OF AMERICAN HEART ASSOCIATION, STARTS PUBLICATION IN JANUARY

Announcement has been made of a new official monthly publication of the American Heart Association, to be known as *Circulation—The Journal of the American Heart Association.* Publication will begin in January, 1950. With the December, 1949, issue the American Heart Association will terminate sponsorship of the monthly *American Heart Journal* which has been the Association's official organ for the past 19 years.

"The needs of the members of the American Heart Association, and of the medical profession in general, require a larger official journal to keep pace with advances in the field of cardiovascular diseases," the announcement states. "*Circulation* will be published in a new, larger format, allowing for the printing of 25% more material in each issue, to give a balanced account of all phases of scientific heart information for the specialist, clinician and investigator. This will assure accelerated publication of articles, bringing valuable medical material to the professional reader at the earliest possible opportunity."

Dr. Thomas M. McMillan, for some years editor-in-chief of the *Journal,* will continue in that capacity for *Circulation* and it is expected that the associate editors and editorial board of the older publication will also serve in the same capacities on the new magazine. The annual subscription price will be $12 ($13 outside the U. S.). The publishers will be Grune & Stratton, 381 Fourth Ave., New York.

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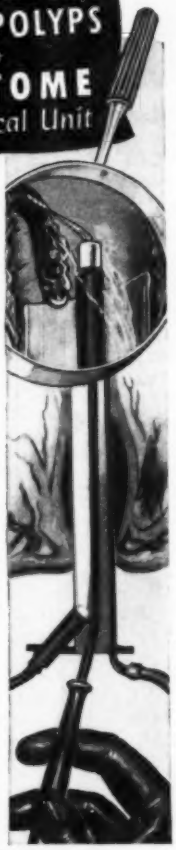

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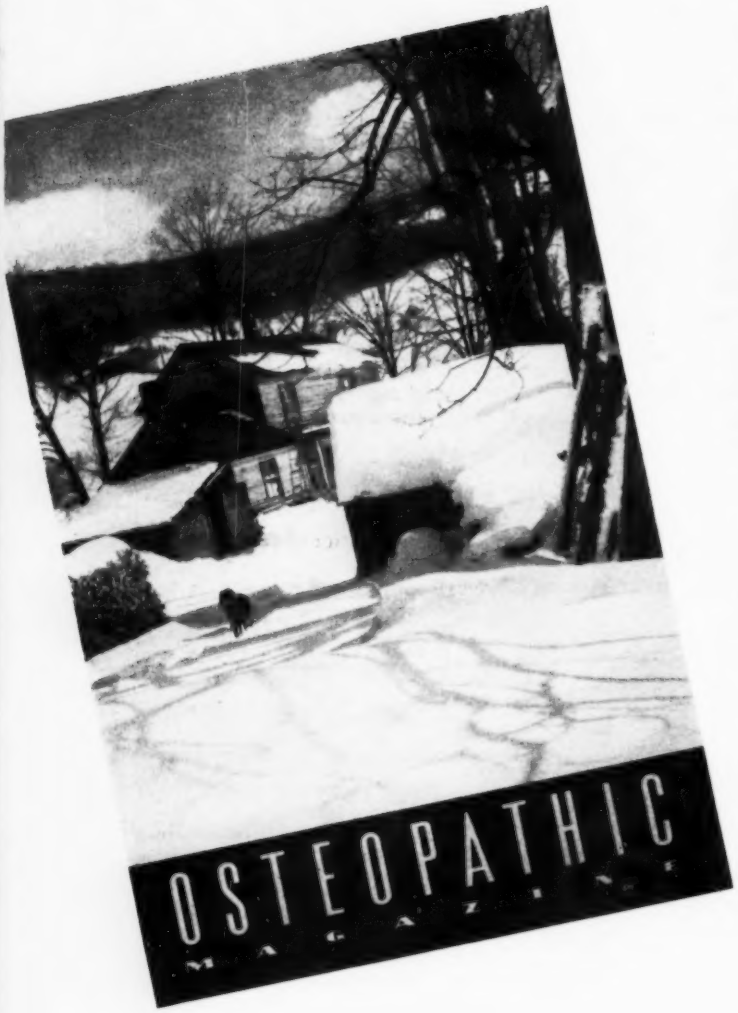

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